

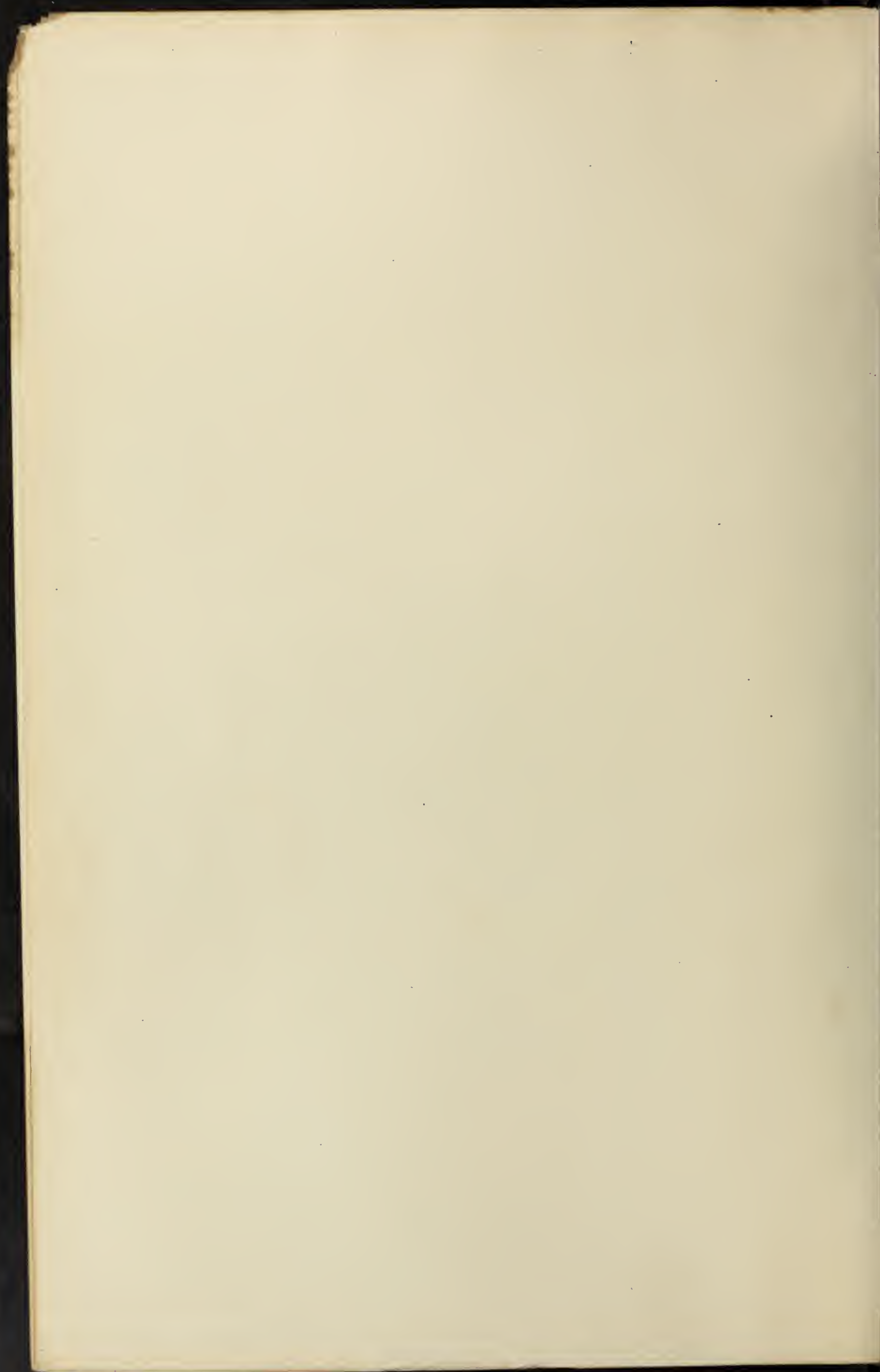
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A.

Abram Cox Stove Company, Nov 29, p 31
 Account books, Removable leaf, Dec 20, p 32
 Acetylene gas:
 Acetylene rendered harmless, Dec 6, p 39
 Car lighting, Aug 30, p 52
 Incandescent and carburated gas, Sep 27, p 72
 Insurance and acetylene, Aug 16, p 37, 45
 Possibilities at the St. Louis Fair, Aug 16, p 51
 Town lighting, Nov 29, p 43
 Acetylene gas burners:
 Columbia, Oct 18, p 44*; Dec 27, p 40*
 Second Wonder, Sep 19, p 48*
 Sunlight, Nov 15, p 50*
 Acetylene gas convention, July 12, p 33; Aug 9, p 53; 16, p 48
 Acetylene generators:
 Drake Series C, July 26, p 49; Aug 23, p 48*
 Drake Special, Nov 15, p 45
 Efficiency of, Aug 2, p 51
 Ideal Epworth "D," Dec 13, p 43*
 Pathfinder portable, Aug 30, p 48*
 Acetylene gas range, Graf, July 5, p 34*
 Acetylene gas plant, Cost of, July 5, p 46
 Acetylene gas supplies, Williamson, Sep 27, p 56
 Acetylene gas wrinkles, Aug 16, p 52
 Advertising:
 Hints, Aug 30, p 43
 "Take a look at this stove," July 26, p 42*
 (See also Business methods: Window display.)
 Aeolipyle Company, Nov 1, p 38
 Aerated fuel process, Aug 2, p 47
 Agate ware as a life saver, Nov 29, p 36
 Agricultural prosperity, Aug 9, p 35; Sep 27, p 43
 Air diffuser, Degge, Aug 16, p 44*
 Air in steam radiators, Liberating, Oct 18, p 45*
 Air valves, Argon automatic, Oct 11, p 50*
 Alcohol motors in Germany, Sep 13, p 53
 Alexander Furnace & Mfg. Company, Business methods, Dec 13, p 30
 Allen automatic air valve, Aug 16, p 50*
 Aluminum:
 Commercially pure, July 26, p 55
 Manufacture of, Nov 1, p 42
 Rules for casting, Sep 13, p 57
 Aluminum nursery saucepan, Dec 20, p 42*
 Aluminum paint, Dec 27, p 35
 Aluminum solder:
 Totten, July 5, p 44
 Webster, Sep 20, p 63
 Whitney, Aug 2, p 58
 Aluminum soldering, Aug 30, p 46; Nov 1, p 55
 Aluminum ware, Erie cast, Dec 6, p 35
 Amalgamated Association, July 19, p 52
 Call for meeting of tin plate workers, Oct 18, p 55
 Tin plate wage scale, July 19, p 53; 26, p 58
 American Bicycle Company, Sep 6, p 62
 American Brazing Company, Sep 6, p 62
 American Porcelain Company, Dec 6, p 41
 American Radiator Company:
 New plant, July 19, p 48
 Publications, July 19, p 47
 American School of Correspondence, Sep 6, p 49; 20, p 44; Nov 29, p 48; Dec 13, p 35

American Society of Heating and Ventilating Engineers, Oct 4, p 56; N v 22, p 44
 American Spiral Pipe Works, Aug 2, p 50
 American Steam Laundry Company, Cooling plant, July 26, p 50
 American Stove Company, Officers, Sep 13, p 41
 American Tin Plate Company:
 Booklet for roofers, Sep 27, p 63
 Misleading reports, July 19, p 53; Aug 9, p 48
 New black plate process, Aug 9, p 49
 Prices decline, Oct 4, p 51
 Wage scale on tin plate for export, July 19, p 53; 26, p 58; Aug 9, p 49; 23, p 55; Sep 13, p 55; 20, p 60; 27, p 64; Oct 4, p 41; 18, p 55; 25, p 51; Nov 1, p 35, 54
 Antimony in 1901, July 26, p 62
 Apartment house in New York, Nov 22, p 49
 Architects and the roofing question, Aug 2, p 59
 "Are you ready?" Aug 16, p 37
 Argon air valves, Oct 11, p 50*
 Art Metal Construction Company, July 26, p 60
 Asbestos coated rubber, Dec 13, p 35
 Ash cans, L. & G., Sep 6, p 43*
 Ash sifter, Dec 20, p 31*
 Association of Brass and Iron, Steam, Gas and Water Goods Manufacturers, Dec 20, p 40
 Association of Manufacturers and Jobbers of Plumbing Supplies, Sep 13, p 47; 20, p 58
 Athens, International Exposition at, Nov 15, p 38
 Atlantic Coast Master Plumbers' Association, Nov 1, p 44; 15, p 47; Dec 13, p 36
 Atomizer and sprinkler, Lenox, Dec 6, p 35*
 Austrian continuous sheet mill, Nov 29, p 40*

B.

Balancing a combination job of heating, Aug 9, p 41
 Bar folder, Niagara, Nov 29, p 37*
 Bar mill consolidation abandoned, July 19, p 54
 Barnes drill, Nov 22, p 39*
 Basket, Aluminum dipping and plating, Aug 9, p 45*
 Baths, The utility of the spray and shower, Nov 29, p 37
 Bathtub equipments, Aug 2, p 49*; Oct 4, p 62; Nov 22, p 44
 Bathtubs:
 Enameled iron, Aug 16, p 52
 Standard porcelain, Dec 6, p 38*
 Batteries, Recharging dry, Nov 29, p 49
 Beaters, Taplin improved, Oct 18, p 42*
 Behrer, Martin, Portrait of, Oct 4, p 57*
 Belfield, H., & Co., Steam goods, Dec 6, p 39
 Belleville Stove Works, Aug 16, p 40
 Benton Mfg. Company, Dec 20, p 32
 Berger headlight, Aug 2, p 44*
 Berger Mfg. Company, Nov 15, p 56
 Bergstrom Bros. Company, Oct 4, p 46
 Berryman, J. B., Piping materials for steam plants, Aug 9, p 54
 Bibb, B. C., Stove Company, Sep 13, p 43
 Bibbs, New Departure, Aug 2, p 46*
 Bids, Fee for, Grand Rapids Master Plumbers, Sep 13, p 39
 Billow system of fuel oil appliances, Aug 30, p 49
 Bixby, J. L., Jr., Cubical contents charts, Oct 18, p 46
 Blacklock Foundry, Nov 29, p 36
 Blessing, C. A., The Louise Memorial Hospital at Niagara Falls, Dec 20, p 40

Bliss, E. W., Company, Aug 30, p 57
 Boat, Sheet metal, Dec 6, p 46*
 Boiler connection fittings, Lawler, Sep 6, p 55*
 Boiler connections:
 Boiler below range, Sep 13, p 49*
 Boiler too low, Aug 2, p 60* 9, p 58; 30, p 61
 Connecting below range, Dec 27, p 43*
 Connections should be larger, Oct 25, p 60*
 Heating from range boiler, Sep 13, p 58; Oct 4, p 66*
 Heating from water backs, Oct 18, p 57*
 Heating radiator from hotel range, Nov 29, p 49
 Heating water with steam, Sep 6, p 58; 27, p 67*
 Main pipes too small, Nov 15, p 58*; 22, p 50; 29, p 50; Dec 6, p 50*
 Wet or dry return? Nov 15, p 58
 Boiler trade:
 Favorable reports, Aug 9, p 51
 Prices advance, July 5, p 47; Sep 13, p 47
 Boilers:
 Changing water in heating systems, Oct 4, p 66; 18, p 58
 Columbia steam and water heater, Sep 13, p 50*
 Double boiler work, Nov 29, p 45*
 Hammering in range boiler, Sep 13, p 59
 Ideal, Sep 6, p 53
 International, July 5, p 52
 International "F" series, July 19, p 46*
 Location of range boiler, July 12, p 55
 Paragon, Oct 11, p 52*
 Range boiler and water front, Sep 20, p 52*
 Richmond, Sep 6, p 54
 Royal, Nov 29, p 45
 Standard, July 12, p 45; Aug 30, p 49
 Standard 20 series, Aug 23, p 47*
 Sun Ray, July 5, p 55; Aug 2, p 47*
 Walker & Crawford, Sep 6, p 52
 Boiling points of water at different heights of vacuum, July 12, p 45
 Bolts:
 Expansion, July 5, p 46*
 Steel toggle, Oct 25, p 56*
 Bond, Joseph, Death of, Aug 16, p 46*
 Book reviews:
 Art of Enameling on Metal, Aug 9, p 63
 Assaying and Metallurgical Analysis, Dec 20, p 44
 Electro Plating and Electro Refining, Oct 18, p 41
 Heating and Ventilating Buildings, Oct 4, p 63
 Hints on Joint Wiping, Nov 22, p 45
 Manual of Business, Sep 27, p 65
 Manual of Drawing, Nov 15, p 61
 Metal Worker Pattern Book, Oct 11, p 56
 Municipal Year Book, Aug 30, p 55
 National Tube Company's Book of Standards, Sep 13, p 53
 Reference Library of Modern Engineering, Dec 13, p 35
 Steam Heating and Ventilating, July 12, p 53
 Book shelf, Gas pipe, Oct 11, p 49*
 Boston Master Plumbers' Association, Aug 23, p 47
 Boston plumbing school, Oct 25, p 54
 Boynton Furnace Company, Oct 4, p 48
 Brand Stove Company, Oct 11, p 37
 Briquette making in Germany, Nov 8, p 54
 Briscoe Mfg. Company, Dec 6, p 34
 Britannia metal mouthpieces, July 5, p 56
 British Tube Association re-established, July 19, p 48

Broiler, Improved Hein's, Sep 20, p 50*
 Brooklyn Metal Ceiling Company, July 12, p 50
 Broschart & Braun, New York, Dec 20, p 36
 Brown & Wales, Boston, Aug 23, p 49
 Buckwalter Stove Company, Sep 6, p 41
 Buffalo fans and engines, Aug 9, p 53
 Building trade:
 Chicago trade, July 26, p 62; Oct 25, p 38
 Conciliation and arbitration in, Dec 20, p 25
 Higher cost of building, Sep 13, p 39; Dec 6, p 30; 27, p 27
 Western trade, Aug 23, p 40
 Buildings:
 Modern apartment house in New York, Nov 22, p 49
 Tenement house construction in New York, Nov 29, p 29
 Burner, Lindsay vibration, Oct 18, p 48*
 (See also Acetylene gas burners; Oil burners.)
 Business failures for six months, July 5, p 32
 Business methods:
 "Are you ready?" Aug 16, p 37
 Care of prices, quotations and catalogues, Aug 9, p 44*; Oct 25, p 47
 Cost of doing business, Oct 4, p 41
 Courtesy, Value of, Dec 27, p 35
 Enlarging a retail business, Aug 2, p 37
 Help in retail business, Dec 6, p 30
 Keeping track of contracts and jobs, July 19, p 41
 Keeping track of unfilled orders, Oct 4, p 64
 Knowledge of details in business, Nov 1, p 35
 Read trade paper, Aug 2, p 37
 Right way, The, Nov 8, p 31
 "Selling him a boiler," Nov 8, p 48
 Selling organization, Nov 1, p 35
 Shop time system, Sep 26, p 55*
 Weed out old stocks, Nov 15, p 54
 Business situation, Aug 2, p 38; Sep 27, p 44; Oct 18, p 36

C.

Cabot, G. L., on gas mains, Nov 22, p 47
 Calcium carbide, Production of, Oct 18, p 57
 Caldrons, Mott, Aug 30, p 41
 Calkins, W. B., Domestic gas water heaters, July 19, p 44*
 Can opener, Marvel, Oct 4, p 64*
 Canadian Master Plumbers' Association, Aug 23, p 51
 Canal Dover sheet mill destroyed, Dec 20, p 35
 Canal Dover's improved condition, Oct 4, p 51
 Canfield, L. T., Acetylene for car lighting, Aug 30, p 52
 Canonsburg Steel & Iron Works, Aug 9, p 48; Sep 20, p 63
 Canopy for a range, Nov 1, p 58
 Cans, Steel garbage and factory, Nov 15, p 44*
 Canton, Ohio, New independent steel works, July 12, p 52
 Canton Steel Roofing Company, July 19, p 53
 Capacities of vessels, Formulas for determining, July 12, p 50; 19, p 52; Sep 13, p 58
 Capacity of a cylindrical tank, Nov 15, p 58
 Car famine, Nov 22, p 31; Dec 26, p 27
 Car heating:
 English method, July 12, p 45
 System in yards, Sep 13, p 48
 Car lighting with acetylene, Aug 30, p 52
 Car ventilation needed, Dec 6, p 29
 Carbonizing in fuel oil burners, Nov 29, p 31
 Carnahan Stamping & Enameling Company, July 12, p 40
 Carpet and clothes whip, Dandy electric, Sep 27, p 65*
 Carpet stretchers, Hinkle, July 26, p 63

Carriage heaters, Dec 27, p 36
 Carroll Iron Works, Nov 8, p 45
 Carter, J. M., discusses the labor question, Oct 18, p 43
 Casting rubber, Nov 29, p 49
 Cat teasers, Sheet metal, Dec 6, p 45*
 Catalogues:
 Keeping, Dec 13, p 34*
 Sizes of, Aug 30, p 39; Sep 20, p 66; 27, p 67; Oct 4, p 65
 Cementing porcelain letters to glass, Sep 20, p 60
 Central station plants:
 Dwelling houses, Oct 4, p 55
 Public buildings, Sep 20, p 44; 27, p 43
 Steam heating advanced by coal scarcity, Oct 11, p 35
 West Chester, Pa., July 12, p 43
 York, Pa., Nov 15, p 45
 Central Supply Association, Nov 1, p 49
 Cesspool, Building water tight, Oct 25, p 60
 Chairs, Iron seats and backs for, Dec 13, p 48*
 Chandler Pump Company, July 19, p 46
 Channon-Emery Stove Company, Sep 20, p 45
 Charles, S. A., Distribution of fire hydrants, Nov 29, p 47
 Chicago Flexible Shaft Company, Dec 13, p 45
 Chicago Retail Hardware Association, Onting, Aug 9, p 43
 Chimney cap, Everlasting, July 5, p 44*
 Chimney top pattern, Aug 2, p 59* 16, p 60; Sep 20, p 66
 Chimney ventilator, Siphon, July 5, p 45*
 Chimney for gas burner, Mica, Oct 25, p 48*
 Chimneys:
 Cleaning, Sep 13, p 58
 Draft poor, Oct 4, p 66*
 Trouble with a, Dec 13, p 51
 Churches:
 Unsanitary, in New York, Dec 20, p 25
 Unsatisfactory heating, Oct 25, p 59*; Nov 1, p 57
 Churn, Pattern for, Aug 2, p 54*
 Cilley, M. H., Combination die for sheet metal flanges, Nov 8, p 50*
 Circulator and distributor, Hot air, Nov 1, p 38*
 Clamps, Taylor self locking, Aug 23, p 58*
 Cleaning sanitary enamel, Sep 6, p 57
 Cleanout and dead end stopper, Craig, Oct 25, p 53*
 Clemson, G. N., Heating and ventilating residence of, July 5, p 48*
 Cleveland Stamping & Tool Company, Dec 20, p 31
 Coal:
 Anthracite supply, Nov 15, p 37
 Comparative tests, Oct 25, p 40*
 Do you sell coal? Oct 4, p 45
 How to measure coal in a bin, Nov 29, p 48
 Soft, Instructions for use of, Oct 25, p 44
 Soft coal burning, Sep 20, p 43, 66; Oct 11, p 42; 8, p 35, 39; 25, p 43; Dec 6, p 31
 World's production, Nov 15, p 38
 Coal strike, July 26, p 39; Aug 23, p 44; 30, p 39; Sep 13, p 40; 27, p 43; Oct 18, p 37; 25, p 37
 Coal substitute did not work, Nov 8, p 35
 Cock, Field automatic, Aug 2, p 50*
 Coldwell Lawn Mower Company, Prizes to employees, Aug 16, p 43
 Colwell Lead Company, July 26, p 52
 Combustion governor, Aeolipyle, Nov 1, p 38
 Commercial Oriental Expedition Company, Sep 13, p 59
 Comstock-Castle Company, Quincy, Ill., Aug 2, p 41
 Cooling a laundry, Grand Rapids, Mich., July 26, p 50
 Cooling a roof, July 19, p 53
 Cooney & Geiger, Indianapolis, Aug 16, p 44

Co-operative Foundry Company, Aug 2, p 40; Sep 27, p 46*

Copper:

 Coloring, Oct 11, p 60
 Retinning, Aug 9, p 58
 Soldering, Oct 18, p 58
 Copper bronze liquid, INL, Nov 8, p 53
 Copper for smoke pipe, July 12, p 55; 19, p 55; 26, p 63
 Cornices, Putting up galvanized iron, July 12, p 49*; 26, p 57*; Aug 9, p 46*
 Cost of doing business, Oct 4, p 41
 Cost of production increasing, Oct 11, p 36
 Courtesy, The value of, Dec 27, p 35
 Crane Company, Sep 20, p 58
 Cream City ware, Aug 30, p 45
 Cream separators:
 Arras, Dec 6, p 34*
 National, Oct 25, p 48*
 Creosote in brick wall, Counteracting effect of, Oct 18, p 58; 25, p 59
 Cuba, Sanitary conditions in, Dec 6, p 40
 Cubical contents charts, Oct 18, p 46
 Cunningham, R. C., Foundry costs, July 19, p 36
 Currier, E. N., Death, July 5, p 36
 Curtis, R. E., Swiveling joint for high pressure steam main, July 12, p 44*

D.

Dailey gas man; a poem, Nov 8, p 46
 Dart brass goods, Dec 27, p 40*
 Dart couplings, Dec 6, p 41
 Davis, John, Company, New plant, Aug 16, p 47
 Degge air diffuser, Aug 16, p 44*
 "Demand for bright young men," Aug 23, p 40
 Devlin, Thomas, & Co., Aug 23, p 47
 Dewey stock fountain, Aug 2, p 45*
 Dies:
 A combination, Aug 30, p 58*
 Combination, for sheet metal flanges, Nov 8, p 50*
 Economy pipe, Oct 18, p 49*
 Dimock & Fink Company, Reception of employees, Nov 8, p 46
 Dinner pail, Lisk oval, July 5, p 38*
 Display shelf, High, Dec 20, p 31*
 Display windows, (See Window display.)
 Distilling apparatus, Nov 29, p 49
 District of Columbia, Master Plumbers' Association, Dec 13, p 43
 Doe-Wah-Jack, History of, Aug 30, p 42
 Doty punch and shear, Nov 22, p 42*
 Downman-Dozier Mfg. Company, Nov 29, p 39
 Draft regulator, Milwaukee, Nov 8, p 37*
 Drain stoppages, Removing, Nov 22, p 46*
 Drake acetylene generator, Aug 23, p 48*
 Drill, Barnes sensitive, Nov 22, p 39*
 Dudley combination wrench, Aug 9, p 57*; Dec 6, p 41*
 Duffy, James, Death of, Sep 13, p 42*
 Duluth Corrugating & Roofing Company, Nov 8, p 51

E.

Eastern Granite Roofing Company, Aug 23, p 57
 Eastern Trade Golf Association, Aug 9, p 51; Sep 6, p 53; 13, p 47; 20, p 56*
 Edmonds, R. H., on the need of trade education, Sep 6, p 37
 Educated mechanics, Nov 22, p 32
 Eight-hour legislation, Nov 22, p 31
 Elbow mitering against soffit of winding chute, July 5, p 40*
 Elbows, Rises for, Sep 6, p 57*
 Electric heating, Oct 25, p 37
 Electric lamps, Hubbell pull cluster, Nov 1, p 47*
 Electric wiring and fires, Aug 2, p 60
 Electric wiring rules, July 12, p 58
 Electrically equipped house, Dec 27, p 34
 Electricity for cultivation of plants, Aug 16, p 38

- Electrolysis of underground pipes, Preventing, Dec 6, p 48
 Elmo steam specialties, Oct 11, p 51
 Empire Iron & Steel Company, Sep 6, p 49
 Employees. (See Labor question.)
 Enamel, Cleaning, Sep 6, p 57
 Enameled ware:
 Foreign, Importation of, Dec 13, p 33
 Lava, Dec 20, p 31
 Manufacture in the United States, July 12, p 40
 Enameling plants and the manufacture of enameled specialties, Sep 6, p 45*
 Estimating sheet metal work, Dec 13, p 46; 20, p 33
 Examinations for ironmongers' clerks in England, Sep 20, p 49
 Excelsior Steel Furnace Company, Oct 4, p 47; Dec 27, p 29
 Excelsior Tool & Machine Works, Oct 25, p 51
 Export prices, Special, Oct 4, p 41
 Export trade:
 Iron and steel, Aug 9, p 36
 Manufactures, July 5, p 32; Aug 2, p 53; Dec 27, p 28
 Neglect of foreign business, Aug 23, p 39; Dec 20, p 26
 Tin plate, July 19, p 53; 26, p 58
 United States, Statistics, July 19, p 34
F.
 Fanner Mfg. Company, Cleveland, Aug 2, p 40
 Fans:
 Buffalo, Demand for, Aug 9, p 53
 Large fan, Aug 2, p 48
 Faucet, Field self closing, Aug 2, p 50*
 Feed cooker, water heater and steam generator, Dec 6, p 42*
 Filters, Robertson, July 19, p 46*
 Financial prosperity, Sep 27, p 44
 Fire extinguishing appliances, Exhibition in London, Sep 6, p 50
 Fire hydrants, Distribution of, Nov 29, p 47
 Fire losses, July 12, p 34
 Fire place heater, Economy, Oct 4, p 45*
 Fire pot, Twentieth Century down draft, July 5, p 45*
 Fire proofing material, Berger, Nov 1, p 53
 Fire protection in Russia, Nov 1, p 36
 Fisherman's equipment, July 19, p 40
 Flag pole, Iron pipe, Nov 22, p 55*
 Floor slabs, Water closet, Sep 20, p 51*
 Flour sifters, Nov 29, p 36*
 Floyd, Wells & Co., Nov 1, p 40
 Flue stoppers:
 Peerless, Oct 4, p 64*
 Stronghurst, Oct 11, p 46*
 Flush tanks, Repairing, Nov 8, p 45*
 Flushing trap combination, Wade, Nov 15, p 50*
 Flux for tin roofing, Nov 22, p 51; 29, p 49
 Fly escape, Wright, Oct 4, p 64*
 Follansbee Brothers Company, Aug 2, p 55; 16, p 57
 Food choppers:
 Economy, Nov 8, p 38*
 Hall Peerless, Sep 6, p 44*
 New England, Aug 30, p 45*
 Foreign trade, (See Export trade.)
 Forest City paints, Aug 2, p 55
 Formulas for determining capacities of vessels, July 12, p 50; 19, p 52; Sep 13, p 58
 Foundry:
 Conditions in the foundry, July 26, p 42
 Stove foundry, Sep 27, p 46*
 Foundry costs, July 19, p 36
 Foundry labor conference, Nov 22, p 43
 Fountain, Stock, Aug 2, p 45*
 Fox, Martin, Conditions in the stove molding industry, Aug 9, p 38
 Frame for holding twine, Sep 20, p 50*
 France, Reduction of hours of labor, Nov 22, p 48
 Freezing of gas pipes, Oct 18, p 47; Nov 15, p 45
 Freezing of water, Question on, Nov 15, p 58
 Fruit jar holders, July 5, p 38*; Aug 9, p 45*
 Fuel economizer, Burton, Nov 1, p 39*
 Fuel question, (See Coal; Oil.)
 Fuller-Warren Company, Dec 13, p 29
 Furnace difficulties:
 Is job planned right? Dec 20, p 43*; 27, p 43
 Location and air supply, Nov 8, p 56*; 29, p 49; Dec 13, p 50
 Stores heated from one furnace, Aug 30, p 61*; Sep 6, p 57; 20, p 66*; Oct 4, p 65
 Furnace heating, Hard knots in, July 19, p 35
 Furnacemen:
 Hints to, New creed, July 12, p 35
 Reputation, July 26, p 41
 Tribulations of, Sep 20, p 47
 Furnace rules and calculations, July 5, p 34
 Furnace trade, July 19, p 34; Nov 8, p 34
 Furnace work, The financial side of, Dec 13, p 30
 Furnaces:
 Consolidation vs. survival of the fittest, July 5, p 36
 Crown low down warm air, July 12, p 37*
 Enterprise, Nov 1, p 41
 Graff, Oct 11, p 43
 Grate spiral heater, Sep 6, p 40*
 Hot air furnace heating in England, Dec 27, p 30
 Ideal hot air furnace, July 5, p 36
 International, July 19, p 37
 Mueller, in the East, July 26, p 44
 New Home, Oct 11, p 43
 New Superior hot blast, Sep 27, p 51*
 Proportions of warm air furnaces, July 12, p 36
 Quaker, 400 series, Sep 27, p 49*
 Royal, on Pacific Coast, Sep 27, p 51
 Schaffer combination, Oct 4, p 45
 Standard hot air, July 19, p 37
 Utica, Sep 20, p 48
 Wood burning furnaces, July 5, p 36; Oct 4, p 48; Nov 29, p 32*
 Furniture, Sheet metal, July 26, p 60
G.
 Galesburg Cornice Works, July 19, p 53; Aug 16, p 58
 Galvanized sheets, Quality of, Aug 23, p 57
 Galvanized ware, L. & G., Aug 2, p 44; Sep 13, p 46*
 Galvanizing process, Aug 2, p 53
 Gang slitting machines with flattening rolls and winder, July 5, p 43*
 Gas, Amount of needed, for heating in various stoves, Dec 6, p 50
 Gas arc lamps:
 Columbus, Aug 30, p 49*
 Lindsay vibration burner, Oct 18, p 48*
 Gas governors, Aug 9, p 51
 Gas lighting apparatus, Dec 13, p 41
 Ever Ready, Nov 15, p 39*
 Gas meters, Safety of, Oct 4, p 61*
 Gas pipe:
 Relative advantages of cast iron and wrought iron, Nov 22, p 47
 To prevent freezing, Oct 18, p 47; Nov 15, p 45
 Gas pipe connections, Oct 11, p 40
 Gas pressure gauge, July 26, p 49*
 Gas producer, Twentieth Century, Aug 30, p 50
 Gas stove manufacturers organize, Oct 11, p 43; 18, p 37
 Gas stove trade, July 5, p 31
 Gas stove wrinkles, Sep 13, p 42
 Gas stoves:
 Adler, Sep 13, p 42
 Christie Gas King, Dec 6, p 32*
 Cleveland, with reservoir, Sep 6, p 42
 Detroit vapor stoves, Dec 6, p 32
 English, Dec 6, p 32
 Graf acetylene gas, July 5, p 34*
 Iron City, Aug 2, p 40*
 Jewett reflex heater, Nov 22, p 34*
 Monarch, July 26, p 44
 Orient, Sep 20, p 48*
 Reineke, Wilson, Aug 30, p 42
 Gas stoves (continued):
 Reliable vapor stoves, Dec 13, p 29
 Volcano, Nov 1, p 39*
 Vulcan, Sep 20, p 44
 Zenith hotel range, Nov 22, p 34*
 Gas valve, Combination, Aug 16, p 40*
 Gasoline:
 Street storage of, Oct 25, p 48*
 Tested with name, Nov 15, p 40*
 Gasoline fire pot, Warrior, Nov 15, p 51*
 Gasoline risk, Dec 6, p 31
 Gasoline stoves, Jewell, Nov 27, p 29
 Gasoline torches:
 Clayton & Lambert, July 19, p 51*; Sep 13, p 45*
 Turner double torch, July 19, p 43*
 Gauges:
 Gas pressure, July 26, p 49*
 Huebsch pipe testing, Nov 22, p 45*
 Micrometer gauges, Nov 22, p 49*
 Slocumb sheet metal or rubber, Aug 30, p 47*
 Gede Brothers' Iron Roofing Company, Nov 8, p 51
 German sheet syndicate, Sep 13, p 55
 Gender & Paeschke Mfg. Company, Aug 30, p 45
 Gilbert & Barker Mfg. Company, Aug 9, p 53
 Glass, Malleable, Oct 4, p 42
 Glauber Bros. Mfg. Company, Sep 6, p 53
 Glue heater, Nason, Nov 15, p 61*
 Golf Association, Aug 9, p 51; Sep 6, p 53; 13, p 47; 20, p 56*
 Goodrich, Judson A., Trade-mark of, Nov 8, p 48*
 Government by injunction, Dec 6, p 30
 Governors, Gas, Aug 9, p 51
 Graff Furnace Company, Dec 27, p 29
 Grand Rapids Master Plumbers' Association, Fee for bids, Sep 13, p 39
 Grates:
 Back wall for open grate, Aug 9, p 40*
 Kernan shell bar, July 26, p 43*
 Tread-kill shaking, July 12, p 43*
 Green finish for brass goods, Dec 13, p 45
 Greene, Chauncey O., Reminiscences of, Sep 6, p 39
 Grier, T. J., Proportions of warm air furnaces, July 12, p 36
 Grinder:
 Climax bi-treadle, July 12, p 53*
 Hero emery, July 26, p 61*
 Grinding machines:
 Little Badger, Sep 20, p 64*
 Tucker, Sep 13, p 43*
 Griswold Mfg. Company, Dec 6, p 35
 Groovers, Niagara power, Aug 9, p 49*; Dec 20, p 34*
 Gurney Heater Mfg. Company, July 26, p 49; Oct 25, p 55
 Gutter head, Epply, Aug 2, p 60
 Gutter hanger, Horan stay, Sep 27, p 63*
 Gutters, Bursting seams in, Aug 9, p 59; 23, p 59
H.
 Haines, Jones & Cadbury Company, Oct 11, p 50
 Harding, J. A., Furnace rules and calculations, July 5, p 34
 Hartford, Master Plumbers' meeting, Sep 27, p 57
 Hays Mfg. Company, Oct 11, p 51
 Hazardous trades, Discipline in, Aug 23, p 39
 Headlight, Berger tubular, Aug 2, p 44*
 Heat regulator, Automatic, Nov 8, p 36
 Heating:
 Balancing a combination job, Aug 9, p 41
 Car heating, July 12, p 45; Sep 13, p 48
 Central stations, July 12, p 43; Sep 20, p 44; 27, p 43; Oct 4, p 55; 11, p 35; 18, p 35; Nov 15, p 45
 Church heating, Oct 25, p 59*; Nov 1, p 57
 Closed tank system, Sep 6, p 58
 Combination hot air and hot water, Oct 11, p 58*

Heating (continued):

Cost of individual and central station systems, Aug 23, p 59
 Electric, Oct 25, p 37
 England, Hot air furnace, Dec 27, p 30
 Increased pressure, Effect of, Sep 20, p 65
 Office heating expedient, Dec 20, p 29*
 Residence at Middletown, N. Y., July 5, p 48*
 Rules concerning size of furnace and space to be heated, July 12, p 36
 School house, July 26, p 63*; Sep 27, p 66
 Small house and kitchen boiler, July 12, p 55
 Snags in hot water heating, Sep 27, p 56*
 Steam heating on boiler level, July 12, p 55
 Steam heating residence, July 5, p 48*
 Swimming pools, Sep 6, p 51
 Vacuum system of steam heating, July 26, p 49; Aug 9, p 52*; 16, p 45
 Water in heating systems, Change of, Oct 4, p 66; 18, p 58
 Wood furnace heating, Nov 29, p 32*
 Heating force, A new, Sep 13, p 49
 Hibbard, Spencer, Bartlett & Co.'s paints, Nov 22, p 39
 Holder-Athey Hardware Company's store, Nov 22, p 36*
 Holiday trade, Dec 6, p 29
 Holophane Glass Company, Dec 13, p 33
 Home Pride Range Company, Nov 15, p 39
 Hopkins, John, lectures on plumbing, Nov 1, p 46*
 Hose coupling, Improved, Dec 6, p 40*
 House, A freak, built by C. F. Lummis, Nov 8, p 54
 Hungerford, U. T., Brass & Copper Company, Removal, July 5, p 38
 Huxley valve, July 26, p 50*
 Hydrants, Fire, Distribution of, Nov 29, p 47
 Hydraulic rams:
 Operation of, Nov 8, p 44
 Trouble with, Dec 20, p 44

I.

Ice pad, Savin, July 26, p 47
 Ice pick, Dandy, Sep 20, p 50*
 Illinois anti-trust law, End of, July 12, p 34
 Immigration, Undesirable, Aug 16, p 37
 Importations of manufacturers' materials, Nov 15, p 38
 Ink for writing on glass or porcelain, Dec 6, p 36
 Insurance and the acetylene generator manufacturer, Aug 16, p 37, 45
 International Acetylene Association, July 12, p 33; Aug 9, p 53; 16, p 48
 International Exposition at Athens, Nov 15, p 38
 International Sanitary Congress, Aug 16, p 47
 Inventory, Value of, Dec 27, p 27
 Iron and steel imports, Sep 6, p 37; Dec 13, p 28
 Iron and steel production:
 Effect of coal strike, Sep 13, p 39
 Pig iron:
 By grades, July 5, p 31
 For six months, Aug 2, p 53
 Increased production, Dec 13, p 27
 Reduced production, Aug 16, p 37
 World's production, Oct 4, p 42
 Iron and steel trade:
 Interesting phases, July 26, p 40
 Peculiar conditions, Oct 25, p 37
 Pig iron situation, Aug 23, p 41; Oct 11, p 39; Nov 15, p 37
 Price reductions extending, Nov 8, p 31
 Strong iron market, July 12, p 33
 Iron Molders' Union of North America, Aug 9, p 37, 38
 Ironmongers' clerks in England, Examinations for, Sep 20, p 49

J.

Jobbers and retailers, Sep 6, p 38
 Johnson, J. B., Death, July 5, p 39
 Johnstown mine calamity, July 19, p 33
 Joints, (See Pipe joints.)
 Jolley, J. H., & Co., Phil., Aug 30, p 59

K.

Kaiser, M. L.:
 Sheet metal boat, Dec 6, p 46*
 Talks on steam fitting, Dec 6, p 37; 27, p 38*
 The range boiler and water front, Sep 20, p 52*
 Kaiser, William, & Son, Cultivating the furnace trade, Nov 8, p 34
 Keeley Stove Company, Sep 27, p 49
 Keeping shop time record, Sep 27, p 55*
 Keeping track of contracts and jobs, July 19, p 41
 Keeping track of unfilled orders, Oct 4, p 64
 Kellogg-Mackay-Cameron Company, Sep 27, p 56; Oct 25, p 56
 Kenney scamer, Aug 9, p 48*
 Kernan shell bar grate, July 26, p 43*

L.

Labor exchange, Chicago, July 26, p 49
 Labor question:
 British wages decline, Nov 1, p 36
 Discussion by James M. Carter, Oct 18, p 43
 Employers and employees, July 19, p 46; 26, p 40
 Government by injunction, Dec 6, p 30
 Loss of time by workmen, Oct 11, p 36
 Prizes to employees, Aug 16, p 43
 Progress of the workingman, July 19, p 33
 Reduction of hours, in France, Nov 22, p 48
 Rights of employers, July 5, p 31
 Skilled workmen good citizens, Oct 11, p 39
 Workmen's organizations and discipline in hazardous trades, Aug 23, p 39
 (See also Wages.)
 Labor unions, Incorporations of, Nov 8, p 31; 29, p 30
 Labor unions and discipline in hazardous trades, Aug 23, p 39
 Lalancé & Grosjean Mfg. Company, Sep 13, p 46; Dec 6, p 35
 Lamps:
 Drawing table gas light, Oct 11, p 49*
 Gas arc lamp, Aug 30, p 49*
 Sheet iron ornamental, Nov 8, p 52*
 Landers, W. H., Company, Dec 6, p 33
 Lanterns:
 Liberty, Aug 9, p 50*
 Paull tubular, Nov 1, p 43*
 Side lift cold blast, July 19, p 40*
 Watchman's electrical, Nov 8, p 56*
 Lath, Metal, Cambridge rigid reversible, Dec 13, p 48
 Laundry, Cooling system, July 26, p 50
 Lava enameled ware, Dec 20, p 29
 Lavatories, Apron pattern, Aug 30, p 52
 Lawler Water Feed & Damper Regulator Company, Aug 16, p 47
 Lead consolidation, Oct 4, p 56; Nov 8, p 47; Dec 13, p 43
 Leaks, Some lessons on, Sep 13, p 56
 Leonard monument, Taunton, Mass., Oct 4, p 66
 Letter box, July 5, p 56; 12, p 54; 19, p 55; 26, p 63; Aug 2, p 59; 9, p 58; 16, p 59; 23, p 59; 30, p 61; Sep 6, p 57; 13, p 58; 20, p 65; 27, p 66; Oct 4, p 65; 11, p 58; 18, p 57; 25, p 59; Nov 1, p 56; 8, p 55; 15, p 58; 22, p 50; 29, p 49; Dec 6, p 49; 13, p 50; 20, p 43; 27, p 43
 Lighter, Ever Ready, Nov 15, p 39*
 Lighting country homes, Aug 9, p 53
 (See also Acetylene gas.)
 Lindemann & Haverson, Milwaukee, Aug 2, p 39
 Linseed oil, Substitute for, July 5, p 39
 Liquid gas from coke, Dec 20, p 26

List price for plumbing goods. (See Plumbing trade.)

Litchfield, J. M., a progressive stove house, Nov 22, p 33
 Local retail associations, Oct 11, p 39
 Lorain Heating & Mfg. Company, Dec 13, p 39
 Lorenzen, C. F., & Co., Chicago, Aug 2, p 64
 Louise Memorial Hospital at Niagara Falls, Dec 20, p 40
 Lummis, Charles F., his freak of a house, Nov 8, p 54
 Lunkenheimer Company, Sep 13, p 49; Nov 8, p 41
 Luster backwall for open grates, Aug 9, p 40*
 Lynn, Mass., Master Plumbers' Association, July 19, p 49

M.

Maag, August, Company, Baltimore, Aug 2, p 45
 McClary Mfg. Company, London, Canada, July 19, p 37; 26, p 43
 McDonald & Morison Mfg. Company, Aug 2, p 49
 McLain, J. H., Company, Canton, Ohio, July 12, p 46
 McMurtry, George C., Presentation to, Oct 11, p 55
 McPhee, Hugh, Shop conditions, July 26, p 42
 McRae & Roberts Company, Nov 1, p 45
 Magee Furnace Company, Sep 13, p 48
 Mahood & Co., Philadelphia, Oct 18, p 40
 Mail box, Tip-Top rural, Dec 13, p 33*
 Malcolm, S. L., Resolutions on the death of, July 5, p 52
 Malleable Iron Fittings Company, Oct 4, p 70
 Malleable iron foundries consolidate, Dec 6, p 36
 Mantel design, Aug 2, p 64*
 Manufactured goods:
 Cost of production increasing, Oct 11, p 36
 Exports of, July 5, p 32; Aug 2, p 53; Dec 27, p 28
 Production in the world, Aug 30, p 40
 Manufacturing costs, Dec 13, p 28
 Marble finish of sheet metal panels, Aug 9, p 47*
 Marietta Sheet & Tin Plate Company, Dec 13, p 48
 Massachusetts Charitable Mechanics' Association, Oct 18, p 43; 25, p 52, 54
 Massachusetts Master Plumbers' Association, Sep 20, p 57
 Mechanical education, Compulsory, Dec 6, p 29
 Mechanics, Educated, Nov 22, p 32
 Merchant & Co., Philadelphia, Aug 2, p 56
 Metal ceilings:
 Berger classic, Dec 27, p 32*
 Brooklyn, July 12, p 50; Sep 6, p 48*
 Canton, July 19, p 53
 Classic, Nov 8, p 51
 Duluth, Nov 15, p 55*
 New York, Nov 29, p 39*
 Popularity, Aug 30, p 39
 Metal Worker, Correspondents must give addresses, July 19, p 33
 Metal Worker cup, Sep 6, p 53*
 Metile, Oct 18, p 58; Nov 1, p 58
 Meurer Brothers Company, Aug 16, p 58
 Mica chimney, Oct 25, p 48*
 Mica production in 1901, July 26, p 62
 Michigan Manufacturers' Association, Aug 2, p 41; Dec 27, p 42
 Michigan Retail Hardware Dealers' Association, Aug 2, p 44; 23, p 46
 Michigan Stove Company:
 Historical tablet, Aug 2, p 39*; 9, p 37
 Labor Day display, Sep 20, p 46*
 Micrometer gauges, Nov 22, p 49*
 Milk strainer pattern, Dec 20, p 36*
 Milwaukee Retail Hardware and Stove Dealers' Association, Oct 25, p 46
 Model Heating Company, Oct 11, p 51

Modern Dwellings Company, Birmingham, Ala., Oct 4, p 55
 Molders' conference agreements, July 26, p 44
 Montross Metal Shiugle Company, July 5, p 44
 Morris, John B., Foundry Company, Oct 4, p 47
 Mossberg, Frank, Company, Nov 22, p 42
 Mott, J. L., Iron Works, July 12, p 44; Aug 16, p 39, 50
 Municipal ownership in America and in Europe, July 5, p 32
 Murdock Parlor Grate Company, Nov 29, p 35
 Muskingum Valley Steel Company, Aug 16, p 55

N.

Nail counter, Nov 8, p 39*
 National Association of Manufacturers and eight-hour legislation, Nov 22, p 31
 National Association of Manufacturers of Plumbers' Marble, Sep 20, p 58; Dec 13, p 42
 National Association of Master Composition Roofers, Aug 9, p 47
 National Association of Master Plumbers, Dec 20, p 38
 National Association of Master Steam and Hot Water Fitters, Trade resolutions, July 19, p 47
 National Liquid Gas Company, Dec 20, p 26
 National Tube Company, Mills at McKeesport, July 26, p 48
 Natural gas:
 As fuel, Aug 23, p 42
 Production in 1901, Sep 27, p 60
 Test of, Oct 25, p 40*
 Navy estimates, Oct 11, p 41
 Nebraska Retail Hardware Dealers' Association, Aug 16, p 42
 Nethery hydraulic flush valve, Aug 30, p 51*
 Neubecker, William, Putting up galvanized iron cornices, July 12, p 49*; 26, p 57* Aug 9, p 46*
 Never-Rust compound, July 5, p 38
 New England Enameling Company, Nov 1, p 58
 New England Stove Company, Taunton, Mass., Sep 13, p 59
 New Jersey State Association of Master Plumbers, July 26, p 53
 New Orleans Master Plumbers' Association, Nov 8, p 44
 New York Central Iron Works, Nov 1, p 47
 New York Centrifugal Trap Company, Oct 25, p 56
 New York City Master Plumbers' Association:
 Bronx Branch, July 19, p 49
 Brooklyn Branch, July 19, p 49; 26, p 52
 Manhattan Branch, Aug 30, p 53; Dec 6, p 37; Dec 20, p 39
 Queens Branch, Dec 20, p 39
 Richmond Branch, Aug 30, p 48
 New York City Plumbing and Steam Supply Bowling League, Aug 23, p 51; Sep 13, p 48; 20, p 55; 27, p 54; Oct 4, p 57; 11, p 48; 18, p 44; 25, p 57; Nov 1, p 50; 8, p 47; 15, p 51; 22, p 45; 29, p 47; Dec 6, p 41; 13, p 44; 20, p 40; 27, p 39
 New York Metal Ceiling Company, Nov 15, p 56
 New York State Master Steam and Hot Water Fitters' Association, Dec 13, p 39
 New York Trade School, Oct 4, p 54; 11, p 47; 18, p 62; Dec 27, p 28
 Newark, N. J., Master Plumbers' Association, July 26, p 53
 Niagara groover, Aug 9, p 49*; Dec 20, p 34*
 Niagara power shears, Oct 18, p 55*
 Nutmeg grater, Marvel, July 19, p 39

O.

Obermayer, S., Company, Sep 27, p 50

Obituaries:

Bond, Joseph, Aug 16, p 46; Burtis, O. H., Sep 20, p 45
 Carrier, E. N., July 5, p 36; Curtis, C. H., Aug 30, p 57
 Duffy, James, Sep 13, p 42
 Glauber, I. N., Dec 13, p 39
 Henry, John, Aug 30, p 59
 Johnson, J. B., July 5, p 39
 Malcolm, S. L., July 5, p 52; McCubbin, C. J., July 26, p 52
 Off, Christian, Aug 9, p 50
 Richardson, H. A., Sep 20, p 45; 27, p 45
 Shepherd, A. R., Sep 20, p 58
 Tudor, Frederic, Nov 15, p 52
 Wood, Alan, Nov 8, p 40
 Office heating expedient, Dec 20, p 29*
 Ohl, George A., & Co., sheet metal working machinery, Nov 1, p 55

Oil:

Method of keeping oils, Nov 1, p 43*
 Substitute for linseed oil, July 5, p 39

Oil burners:

Acme, Sep 6, p 42
 Bailey, Nov 1, p 37*
 Branch, Oct 18, p 39*
 Carbonizing in, Nov 29, p 31
 Clever devices, Sep 27, p 54; Oct 11, p 60*
 Columbia, Oct 18, p 38*
 Delaney, Nov 1, p 58
 How to set oil burners under boilers, July 26, p 48
 Kitchen stove apparatus, Aug 30, p 61
 Larson, Sep 6, p 42
 Makers of fuel oil burners, Aug 23, p 59; Oct 18, p 38
 Objections to burners, Oct 18, p 35
 Swedish kerosene burner, July 12, p 53
 Thompson, for furnaces, July 5, p 33*
 Oil can, Never Fail, Oct 11, p 46*

Oil fuel:

Aerated fuel process, Aug 2, p 47
 Billow system of fuel oil appliances, Aug 30, p 49
 Blocks soaked in oil, Oct 25, p 44
 Progress in use of oil, Sep 20, p 43
 Rockwell burning apparatus, Aug 23, p 52

Oil sprinkling of streets, July 26, p 56
 Oil stove trade, July 5, p 31

Oil stoves:

Banner, Improved, July 26, p 47*
 Christie Gas King, Dec 6, p 32*
 How to select and use, Dec 13, p 54
 Standard Blue Flame, Nov 8, p 33
 Tropical heater, Sep 27, p 53*

Oilers:

Rochester automatic, July 5, p 37*
 Steel pump oilers, July 12, p 39*
 O-Rib-O Club, Dec 6, p 34
 O-Rib-O ware, Dec 27, p 35*
 Oven, Watson portable, July 12, p 36*
 Oven thermometer, Nov 8, p 36

P.

Pacific Tin Plate Company, Nov 1, p 53
 Pail fastener and seal, Armstrong, Sep 6, p 44*

Paint:

Aluminum paint, Dec 27, p 35
 Best paint for flat tin roof, Nov 1, p 58; 8, p 55
 Forest City paints, Aug 2, p 55
 Steel caskets, Paint for, Oct 4, p 66
 Tarred soil pipe, Paint for, Oct 11, p 60; 25, p 59
 Tin roof, Paint for, Dec 13, p 51
 Panics, Can they be prevented? Aug 30, p 40
 Paper holder and cutter, West, July 12, p 39*

Patents, United States, Sep 27, p 65
 Patents and the industrial arts, Oct 11, p 40

Pattern cutting at the New York Trade School, Oct 4, p 54*

Patterns:

Canopy with unequal projectors, Nov 1, p 57*
 Chimney cap, Dec 27, p 33*
 Chimney top, Aug 2, p 59*; 16, p 60; 30, p 61
 Churn of tin, Aug 2, p 54*

Patterns (continued):

Coal hod, Oct 4, p 50*
 Cornice miter, Sep 20, p 65*
 Elbow mitering against soffit of winding chute, July 5, p 40*
 Elbow patterns, Dec 6, p 49*
 Flour sifter, Aug 30, p 56*
 Furnace top, Concave, Aug 9, p 58*
 Gear wheel covers, Oct 11, p 59*
 "Head" to fill end of cornice cut off obliquely, Aug 16, p 60*
 Leader head, July 5, p 56*
 Measure, Flaring, with lip, Aug 16, p 56*
 Milk strainer, Dec 20, p 36*
 Oblique intersection of horizontal molding with roof, July 12, p 54*
 Pipe branching from main pipe, Oct 11, p 59
 Pipe passing around a cylinder, Oct 18, p 52*
 Rectangular furnace hood and deflector, Nov 1, p 52*
 Reduced miter, Nov 29, p 38*
 Roasting pan, Nov 8, p 55*
 Roof flange, Dec 6, p 49*
 Round fluted finial top, July 19, p 55*
 Scale scoop, July 19, p 52*; Nov 22, p 51
 Scoop, Nov 15, p 54*
 Ship ventilator, Sep 27, p 68
 Transition piece or chimney top, Nov 22, p 50*
 Twisted square shaft of curved profile, Sep 20, p 62*
 Vase, Lawn, Sep 27, p 68*
 Ventilator breast, Aug 23, p 56*
 Wash boiler, July 12, p 51*
 Y pattern, Nov 22, p 40*; Dec 13, p 47*

Paxson-Warren sand blast system, July 5, p 35*

Peck, Stow & Wilcox Company, Aug 9, p 48

Peddlers of ranges, How to handle, Aug 9, p 37

Peninsular Stove Company, Aug 23, p 42; Sep 27, p 48

Penn Valve & Fittings Company, Oct 4, p 62

Pennsylvania Railroad to enter New York City, Dec 20, p 44

Pennsylvania Retail Hardware Dealers' Association, July 26, p 46

Pennsylvania Stove Salesmen's Association, Dec 20, p 27

Petroleum, World's production, Nov 8, p 54

Phelps Brothers, New York, Oct 11, p 51

Philadelphia Foundrymen's Association, Oct 11, p 58

Philadelphia sheet metal workers, Nov 22, p 41

Phillips, I. N., The origin of "Pi," July 5, p 43

"Pi," The origin of, July 5, p 43

Pickling brass castings, Aug 2, p 64

Pierce, Butler & Pierce Mfg. Company, July 19, p 48

Pioneer Stove Company, Dec 20, p 27

Pipe:
 Equation of pipe, Aug 23, p 49

Galvanized iron service pipe, Nov 8, p 55

Noisy service pipe, Sep 13, p 58

Protecting partition pipes, Sep 20, p 65; 27, p 67

Street heating systems, Trouble with, Sep 27, p 43

Pipe clamp, Purdy, Aug 2, p 50*

Pipe die, Economy, Oct 18, p 49*

Pipe fittings, Improvements in, Oct 11, p 35

Pipe hangers, F. & M., Sep 27, p 54*

Pipe holder, Monitor, Aug 2, p 48*

Pipe joints:
 Making a rust joint, Sep 20, p 66

Swiveling, for high pressure steam main, July 12, p 44*

Wiping joints on large pipes, Nov 8, p 42*

Pipe machines, Saunders, July 12, p 41

Pipe tapering machine, Universal, Oct 4, p 54*

Pipe testing gauge, Hubsch, Nov 22, p 45*

Piping:

Cold and hot water service, July 12, p 46*
Cold and hot water service and circulating piping, Aug 2, p 46*
Heater coil and tank, in hotel, Sep 13, p 59
High pressure steam, Aug 9, p 59
Hot water connections, Oct 11, p 60
Indirect radiators, Dec 27, p 38*
Piping under difficulties, July 12, p 42*

Stove to radiator, Aug 16, p 59*
Supplementary water heater, Oct 11, p 58*
Talks on steam fitting, Dec 6, p 37*;
20, p 38*
(See also Boiler connections; Plumbing.)

Piping materials for steam plants, Aug 9, p 54; 23, p 50

"Pitch" of a roof, Nov 22, p 50

Pittsburgh as an iron center, Oct 25, p 38

Pittsburgh Cornice & Skylight Company, Dec 20, p 35

Pittsburgh Stove & Range Company vs. Pennsylvania Stove Company, Aug 30, p 43

Pittsburgh Supply Company, Sep 27, p 51

Pittsburgh Valve & Fittings Company, July 5, p 51; 19, p 48

Planer hood, Trouble with, Oct 25, p 59

Plastic stove lining makers meet in New York, Aug 9, p 39

Plumber and a pleased customer, Oct 4, p 62

Plumbers' combination, Sep 20, p 43

Plumbers' day, July 12, p 33

Plumbers' examination, Hartford, Dec 6, p 37

Plumbers' policy, Oct 25, p 38

Plumbers' strike in Norfolk, Va., Basis of settlement, Oct 25, p 54

Plumbing:

American plumbing in royal palaces, Dec 13, p 41

Ancient plumbing, Aug 30, p 51

Connections with vitrified pipe sewers, July 26, p 54

Drum trap with special vent connection, Aug 23, p 59*; 30, p 61; Sep 6, p 58*

Lecture by John Hopkins, Nov 1, p 46*

Problems of the plumber, Aug 9, p 55*

Standing waste fittings, Sep 6, p 52*

Steam fitting, Talks on, Dec 6, p 37*
20, p 38*

Wrinkles for the plumber and steam fitter, Sep 13, p 49

Plumbing inspection in Washington, Sep 6, p 54

Plumbing inspectors, Necessity of, Oct 4, p 56

Plumbing repairs in winter, Dec 27, p 39

Plumbing trade:

Competition in, Nov 8, p 48

Harmony in the trade, Dec 20, p 25

High list for plumbing goods, Nov 1, p 44; 15, p 46; 22, p 41; 29, p 29, 43, 46; Dec 6, p 42; 13, p 42; 20, p 39

Notice sent to trade, July 5, p 47

Return of goods, Dec 20, p 38

Sample of trade protection, July 19, p 43

Troubles in the trade, Nov 29, p 29

Poem: Dailey Gas Man, Nov 8, p 46

Pope Tin Plate Company, Aug 2, p 57

Portsmouth Stove & Range Company, July 19, p 35

Powell, William, Company, steam goods, July 12, p 45

Prentice, L. H., Company, Chicago, Aug 16, p 45

Presses:

Tatum sheet metal, Oct 4, p 52*

Vieillard & Osswald inclinable, Sep 27, p 62*

Prices:

Cutting of prices, Sep 6, p 37

Dropping of prices, Nov 15, p 37

Reductions extending, Nov 8, p 31

Stove plate, Adjusting prices, Aug 2, p 42

(See also Trade report.)

Prices, quotations and catalogues, Care of, Aug 9, p 44*

Projections, Kinds of, Dec 13, p 50*

Proportograph, Oct 18, p 56; Nov 15, p 55*

Pumps:

Buckeye, July 12, p 39*

Deep well pump needed, July 12, p 55

Little Giant Household, Nov 29, p 47*

Tokheim measuring pump, July 19, p 40*

Triumph air and beer pump, Nov 15, p 49*

Williams pump, Sep 6, p 54*

Punch, No. 3 deep throat, Nov 1, p 53*

Punching machines, Doty punch and shear, Nov 22, p 42*

Putty, Adherence of, July 26, p 63

Q.

Quality in demand, July 26, p 39

Quincy, Mass., Master Plumbers' Association, Aug 30, p 49

R.

Racks for:

Balls of twine, July 12, p 40*

Kitchen utensils, Aug 23, p 63*

Washers, July 5, p 37*

Radiator trade, Advance in prices, July 5, p 47; Aug 16, p 47; Sep 13, p 47; Oct 4, p 58; 11, p 52; 18, p 44

Radiators:

Air, Liberating from steam radiators, Oct 18, p 45*

Fowler & Wolfe, Aug 30, p 50

Heating from range, Nov 1, p 56

Making a radiator, Nov 15, p 48*

Penn, July 5, p 55; 26, p 53*

Piping indirect, Dec 27, p 38*

Raising to upper floors, Device for, Oct 18, p 44*

Roman, July 5, p 55

Stove pipe radiator, July 19, p 38*

Rain water cut off, Centennial, Aug 9, p 48*

Raisin seeder, American Wonder, July 19, p 39*

"Range boiler and water front," Sep 20, p 52*

Range peddlers, How to handle, Aug 9, p 37

Rathbone, Sard & Co., Aug 9, p 40

Reading Stove Works, Oct 4, p 47

Reel, Lawson clothes line, Aug 2, p 45*

Reflectors, Frink, Sep 6, p 43

Refrigerators:

Iceless, Sep 27, p 44

Opal refrigerators, Nov 8, p 39

Registers:

Ideal warm air, Aug 23, p 43*

Symonds wall, Dec 13, p 32*

Regulator, Milwaukee draft, Nov 8, p 37*

Reineke-Wilson Company, Aug 16, p 41; Dec 13, p 41

Retail business, Enlarging a, Aug 2, p 37

Retinuing a soup kettle, Aug 9, p 58

"Return of Goods," Dec 20, p 38

Richardson, Henry A., Death of, Sep 27, p 45*

Riveting machine, Whiting, Oct 25, p 49*

Roasting pans:

Anti-Scorch, Nov 8, p 39*

Never-Burn, Aug 9, p 45*

Ressler, Oct 11, p 46*

Roasting rack, July 19, p 39*

Rochester Lamp Company, Aug 2, p 45

Rockwell Engineering Company, Aug 23, p 52

Roofing:

Architects and the roofing question, Aug 2, p 59

Flux for tin roofing, Nov 22, p 51;
29, p 49

Gede metal roofing, Nov 8, p 51

Roofing (continued):

Laying tin roofing, Sep 27, p 68

"M. F." brand tin roofing, Sep 6, p 49

McClure tin, Nov 8, p 53

Perfected Granite roofing, Aug 23, p 57

Quality of roofing tin, Aug 2, p 56

Taylor Old Style tin, Nov 15, p 57

Tectorium, a German material, Aug 30, p 58

Zinc roofing, Dec 6, p 49

Roofing materials, July 19, p 53

Roofs:

Cooling a roof, July 19, p 53

Finishing a roof ridge, Oct 25, p 60;
Nov 1, p 58

"Pitch" of a roof, Nov 22, p 50

Roof around a tree, Aug 2, p 60*; 23,
p 59; Sep 20, p 65*

Rusting of galvanized iron, Aug 9, p 59; 16, p 60; 23, p 57

Royal Heating Company, Sep 27, p 51

Rubber:

Asbestos coated rubber, Dec 13, p 35

Casting rubber, Nov 29, p 49

Scarcity of rubber, Dec 20, p 32

Rudd, F. W., Formulas for determining capacities of vessels, July 12, p 50; 19, p 52

Rumsey & Sikemeier Company, St. Louis, July 19, p 49; Sep 13, p 50

Rust preventive, Borgfeldt, July 5, p 38

Rusting of galvanized iron roof, Aug 9, p 59; 16, p 60; 23, p 57

S.

Salesmen:

Requirements for good, Nov 22, p 38

Traveling, for 1903, Dec 27, p 29

Salisbury Steel & Iron Company, Nov 22, p 36

Sample room, A floating, Sep 13, p 59

Sand blast system, Paxson-Warren, July 5, p 35*

Sanitary Specialty Mfg. Company, Labor exchange, July 26, p 49

Saucepan, Aluminum, Dec 20, p 42*

Sangamon Mfg. Company, Springfield, Ill., Sep 6, p 42

Saunders' pipe machines, July 12, p 41

Schlieder, A. E., Acetylene possibilities at the Louisiana Purchase Exposition, Aug 16, p 51

Schmaier, Milton, & Co., Large plumbing contract, Aug 23, p 52

Schoolhouse heating and ventilating, July 26, p 63*; Sep 27, p 66, 67

Scoop, Pattern for, July 19, p 52*

Scoop for filling nail bins, Nov 15, p 62*

Seamers:

Bell patent roller flange, Aug 16, p 55*

Kenney patent double, Aug 9, p 48*

Sedgwick, William T., and old sanitary theories, July 19, p 59

Selling organization, Nov 1, p 35

Set screw protector, Dec 27, p 34*

Sewage disposal for a small country house, Oct 4, p 60*

Sewers:

Connections, Nov 8, p 48

Connection with vitrified pipe, July 26, p 54

Two outlets, Oct 25, p 55*

Ventilation of, Dec 13, p 43; 20, p 48

Shaffer, T. J., and the Amalgamated Association, Sep 13, p 55

Shearing machines, Niagara power, Oct 18, p 55*

Shears:

Clough deep throat, Nov 8, p 51*

New McLane, Nov 15, p 57*

Sheet metal frieze, Dec 6, p 45*

Sheet metal furniture, July 26, p 60

Sheet metal ornaments, Dec 20, p 36

Sheet metal pattern work, Course in, Sep 6, p 49

Sheet metal statuary, Dec 20, p 34*

Sheet metal work:

Estimating, Dec 13, p 46; 20, p 33

In English trade school, Nov 22, p 41*

Sheet mill, Austrian continuous, Nov 29, p 40*

Shelf, High display, Dec 20, p 31*

Shepard, Sidney, & Co., July 26, p 46

Sherwin-Williams Company, July 26, p 47

"Shine and moonshine," Nov 1, p 42
Shingles:

Moomaw New Century, Sep 20, p 61*
Stamped tin, Aug 16, p 58

Shop conditions, July 26, p 42

Sign made of pipe, Dec 13, p 35*

Slate sinks and trays, Oct 11, p 51*

Smith, Charles, Company, Sep 13, p 44

Smith & Anthony Company, Boston,
Oct 4, p 46

Skylight bars, Finding the lengths of,
Sep 13, p 54*

Skylights, Illinois metal, Dec 27, p 32

Slate, Simple test for, Nov 15, p 56

Sinks, Slate, Oct 11, p 51*

Skylight and rafter tables, Smith, Dec
6, p 45

Solder:

Aluminum solder, July 5, p 44; Aug
2, p 58; 30, p 46; Sep 20, p 63; Nov
1, p 55

Coloring solder, Oct 18, p 58

Wire solder, Lang, Aug 16, p 55

Soldering:

Copper tank, Dec 27, p 43

Solder cools on brass, July 19, p 56

Strainer on a well pipe, July 19, p 53

Soldering furnace, G. B., Oct 11, p 56*

Soldering salts, Lion brand, Aug 16, p
57

Somerville, Thomas, & Sons, Oct 25, p 54

South Africa:

English and American way, Nov 8,
p 41

Johannesburg exhibition, Nov 8, p 40

South African market, Aug 2, p 37;

Sep 13, p 40; Oct 25, p 46

Southern Stove Manufacturers' Asso-
ciation, July 12, p 35

Southern Stove Works, Nov 8, p 35

Sparkling coil, How to make, July 26,
p 63

Speakman ventilated urinals, July 5, p
47

Spinning test, A severe, Sep 27, p 64*

Spontaneous ignition, Nov 29, p 53

Spout, Sap, Grimm, Sep 20, p 50*

Sprayer, Rippley, Dec 20, p 32*

Sprinkler, Crescent ware, Nov 8, p 38*

St. Louis Exposition:

Acetylene possibilities, Aug 16, p 51

Applications for space, July 5, p 55

Power plant, Aug 16, p 38

St. Paul Roofing, Cornice & Ornamental
Company, Nov 29, p 40; Dec 6, p
45

St. Perran, the patron saint of tanners,
Dec 6, p 47

Standard Mfg. Company, Oct 4, p 62;
Dec 6, p 38

Standard Sanitary Mfg. Company, Oct
11, p 49; Nov 22, p 44

Standard Tin Plate Company, Aug 16,
p 57

Standing waste fittings, Sep 6, p 52*

Stands for:

Covers, Nov 8, p 39*

Dampers, Aug 30, p 45*

Statuary, Sheet metal, Dec 20, p 34*

Steam fitters and trade protection, Aug
23, p 39, 49

Steam Fitters' trade resolutions, July
19, p 47

Steam fitting, Talks on, Dec 6, p 37*;
27, p 38*

Steam heating and ventilating of resi-
dence, July 5, p 48*

Steamship lines, Mexican, Oct 11, p 58

Steel, Ryerson's spinning steel, Sep 27,
p 64*

"Stick to the old man and the old
stand," Sep 6, p 40

Stock fountain, Dewey, Aug 2, p 45*

Stock watering device, Oct 11, p 60;
25, p 60

Stop cock, Tapping a, Oct 18, p 48*

Store arrangement, Holder-Athey Hard-
ware Company, Nov 22, p 36*

Stove captain needed, July 19, p 35;
26, p 41; Aug 16, p 39; 23, p 42;

30, p 41; Sep 13, p 41

Stove easter, Gem ball bearing, Aug 2,
p 41*

Stove Founders' National Defense As-
sociation, Agreements with the
Metal Polishers, July 12, p 38;
19, p 38

Stove history, by Chauncey O. Greene,
Sep 6, p 39

Stove making, Sep 27, p 46*

Stove Manufacturers' Repair Asso-
ciation, Nov 1, p 41

Stove molders, Scarcity of, Oct 25, p 42

Stove molding industry, Aug 9, p 38

Stove pipe:

Copper, for smoke pipe, July 12, p 50;
19, p 55; 26, p 63

Galvan patent lock, Aug 9, p 37*

Star brand of nested, Oct 18, p 42*

Stove pipe damper, Gem, Aug 9, p 43*

Stove pipe fastener, Williams' adjust-
able, Sep 27, p 48*

Stove pipe thimble, Dayton adjustable,
Aug 16, p 41*

Stove plate prices, Adjusting, Aug 2, p
42

Stove repairs, Oct 4, p 47; Nov 1, p 41;
Dec 27, p 29

Stove trade:

A captain needed in the stove indus-
try, July 19, p 35; 26, p 41; Aug
16, p 39; 23, p 42; 30, p 41; Sep 13,
p 41

Activity everywhere, Aug 30, p 41

Canadian trade, Nov 29, p 30

Chicago, Oct 11, p 37; Nov 8, p 33

Conditions in the stove molding in-
dustry, Aug 9, p 38

Effect of the coal strike, Aug 9, p 35;
Oct 4, p 43; Nov 22, p 33

Lack of trade news, Dec 20, p 27

New century trading and better
trade, Nov 29, p 30

New England, Nov 1, p 37

New York prices advance, Sep 20, p
45

Pennsylvania, Aug 16, p 39

Philadelphia, Oct 11, p 42

Prices good for stove buyer, Sep 13, p
41

Range prices advance, July 5, p 33

Retail prices of stoves, Sep 6, p 41

South Africa, Dec 6, p 33

Southern States, Oct 25, p 39

Summer trade, Aug 9, p 37

Western prices advance, July 12, p
38; Oct 25, p 39; Nov 22, p 36

Stover Mfg. Company, Nov 8, p 44

Stoves and ranges:

Acorn stoves and ranges, Aug 9, p 40

Bay State range, Sep 27, p 51

Buck, Sep 6, p 41

Buckwalter, Sep 6, p 41

Cahoon anti-smoke, Sep 20, p 45

Charter Oak, Aug 23, p 43

Chilson, Dec 27, p 29

Cole hot blast, Oct 11, p 43

Columbian, Sep 27, p 49

Crawford, Sep 6, p 41

Dockash, Nov 8, p 36

Early stoves and their makers, Sep
6, p 39

Economy, Aug 2, p 41

Elmhurst base and surface burners,
Oct 4, p 46

Enameled ranges, July 5, p 56

Faultless ranges, July 19, p 37

Garland, Aug 9, p 41

Garland soft coal, Nov 1, p 39

Gas from hot air stove, Nov 15, p 58*;
22, p 51

Globe Company, Nov 1, p 40

Gold Coin, Aug 30, p 42

Hard coal stoves not adapted for soft
coal, Sep 20, p 46

Hub stoves and heaters, Oct 4, p 46

Jewel steel ranges, Aug 2, p 42

Jewett, Nov 1, p 37

Laurel, Oct 11, p 44

Magee ranges, Oct 25, p 39

Manufacture of the Red Cross range,
Sep 27, p 46*

Model Bride range, Nov 8, p 33

Monarch Hub range, Aug 2, p 41

Monogram, Nov 8, p 35

Mott, Aug 16, p 39

New England range, Repairs for, Sep
20, p 65

Norman, Nov 15, p 39

Office heating expedient, Dec 20, p
29*

Peerless, Nov 1, p 38

Peninsular slack burners, Aug 23, p
42*

Stoves and ranges (continued):

Penzy coal cook stoves, July 12, p 54

Portable stove, Watson, July 12, p
36*

Red Cross, Aug 2, p 40; Sep 27, p 46*

Reliable ranges and heaters, July 12,
p 37

Riverside, Nov 1, p 40

St. Clair, Aug 16, p 40

Stewart range, Sep 27, p 50*; Dec 13,
p 29

Sunshine, Oct 4, p 47

Superior, Aug 23, p 44

Welcome line, Dec 20, p 29

White, Aug 30, p 42

(See also Gas stoves; Oil stoves.)

Stream pollution by sewage, Nov 22, p
51

Street sprinkling with oil, July 26, p 56

Stromel Brothers, Minneapolis, Oct 11,
p 56

Strikes, (See Coal strike; Plumbers'
strike.)

Stuffer and press, Enterprise, Oct 18, p
42*

Summer & Goodwin Company, Boston,
July 19, p 45

Swimming pools, Heating, Sep 6, p 51

Swiveling joint for high pressure steam
main, July 12, p 44*

Syracuse Stove W rks, Dec 20, p 29;
27, p 30

T.

Tank, House, Combination, Aug 30, p
50*

Tank dimensions, Nov 1, p 58

Tapping a stop cock, Oct 18, p 48*

Tariff revision, Nov 8, p 32

Tatum sheet metal press, Oct 4, p 52*

Taylor, N. & G. Company, lease Mary-
land mills, Dec 20, p 37

Tectorium, a German building material,
Aug 30, p 58

Tenement house construction in New
York, Nov 29, p 29

Texas Retail Hardware and Imple-
ment Dealers' Association, Oct
25, p 46

Thawing frozen water pipes by elec-
tricity, Dec 13, p 39

Thermometer:

Oven, Nov 8, p 36

Standard recording, Oct 25, p 54*

Thomas, W. W., on the shower bath,
Nov 29, p 37

Time recorder, Simplex, Sep 6, p 44*

Time system for shop, Sep 27, p 55*

Tin plate manufacture in South Wales,
July 26, p 58

Tin plate mills idle, Sep 20, p 60

Tin plate production, Pennsylvania,
1901, Sep 20, p 63

Tin plate trade:

British, Oct 25, p 50

British view of American trade, Nov
8, p 52

British view of future trade, Oct 4,
p 53

Slack trade, Oct 4, p 41, 51

Welsh trade, July 12, p 50; Sep 13, p
55; Dec 20, p 37

Tin plate wage scale, July 5, p 44; 12,
p 59; 19, p 53; 26, p 58; Aug 2, p
54; 9, p 49; 23, p 55; Sep 13, p 55;

20, p 60; 27, p 64; Oct 4, p 41; 18,
p 55; 25, p 51; Nov 1, p 35, 54

Tinners' furnace, Torrid No. 10, Dec 20,
p 35*

Tinning cast iron, Sep 13, p 59; Dec 20,
p 44

Toaster, Clark crispy, Oct 18, p 42*

Ton of pig iron of 2240 pounds, Sep 6,
p 38

Torrance, Francis J., Nov 8, p 46

Towel rack, Imperial roller, Aug 30,
p 45*

Trade education, The need of, Sep 6,
p 37

Trade paper and the busy tradesman,
Aug 2, p 37

Trade protection and the steam fitters,
Aug 23, p 39, 49

Trade report, July 5, p 57; 12, p 56; 19,
p 57; 26, p 64; Aug 2, p 61; 9, p 60;

16, p 61; 23, p 60; 30, p 62; Sep 6,
p 59; 13, p 60; 20, p 67; 27, p 69;

Trade Report (continued):

Oct 4, p 67; 11, p 61; 18, p 59; 25, p 61; Nov 1, p 59; 8, p 57; 15, p 59; 22, p 52; 29, p 51; Dec 6, p 51; 13, p 52; 20, p 45; 27, p 44

Trade schools:

English, Metal work in, Nov 22, p 41*
Need of, Aug 9, p 35

Public support of, Dec 27, p 28

Trane Vacuum Heating Company, July 26, p 49; Aug 9, p 52*

Trap screw ferrule, Hay's iron body, Nov 8, p 46*

Trapping wash trays and sinks, July 26, p 48*

Traps:

Centrifugal, Oct 25, p 56

Wade flushing trap, Nov 15, p 50*

Tregoning, W. H. Manufacture of tin plate in South Wales, July 26, p 58

Truck, Sheet metal, Aug 2, p 55*

Tucker grinder, Sep 13, p 43*

Tumbler and tooth brush holder, Nov 22, p 39*

Tunis, Stoves and lamps in, Nov 15, p 39

Tunnel for underground steam pipes, July 12, p 41*

U.

Ummach, C. E. Acetylene wrinkles, Aug 16, p 52

Union Sheet Metal Workers, Dec 6, p 50; 13, p 50; 20, p 43

Union Stove Works, July 26, p 44

United Association of Plumbers', Gas Fitters and Steam Fitters' Helpers, Aug 30, p 48; Sep 6, p 51

United Hardware & Supply Company, Aug 23, p 45

United Pump & Supply Company Oct 4, p 56

United States Sanitary Mfg. Company, Oct 18, p 45

U. S. Steel Corporation:

Assets, Aug 9, p 36

Price cutting, Dec 13, p 48

Production of, Sep 13, p 55

Purchase of Union Steel Company, Dec 20, p 35

Universal Machine Company and the Canton Foundry & Machine Company, July 12, p 51

Universal power pipe tapering machine, Oct 4, p 54*

Urinals, Speakman ventilated, July 5, p 47

V.

Vacuum system of steam heating, July 26, p 49; Aug 9, p 52*; 16, p 45

Valve facing tools, Dec 27, p 39*

Valves:

Allen automatic air valve, Aug 16, p 50*

Argon automatic air, Oct 11, p 50*

Ball check valve, Dec 20, p 38*

Gas or vapor valve, Aug 16, p 40*

Huxley valve, July 26, p 50*

Nethery hydraulic flush valve, Aug 30, p 51*

Three-way valves, Aug 23, p 54*

Vegetable and fruit slicer, Oct 25, p 49*

Ventilation:

Cooling a laundry, July 26, p 50

Discussion, Sep 27, p 68

Ventilation (continued):

Heating and ventilating with steam, July 5, p 48*

Legislation on, Dec 13, p 27; 27, p 37

School houses, Sep 27, p 67

Sheffield, Eng., telephone exchange, Aug 30, p 60

Subways, Aug 9, p 59

Ventilators:

American, Nov 8, p 53*

Star, Nov 1, p 55*

Syphon, July 5, p 45*

Valve-light, Aug 16, p 57*

Venting problem, Oct 4, p 65*

Vieillard & Osswald inclinable press, Sep 27, p 62*

Virginia State Association of Master Plumbers, Dec 13, p 38

Vise, New Universal, Nov 15, p 44*

Vollkommer, J. Modern enameling plants and the manufacture of enameled specialties, Sep 6, p 45*

Vrooman, H. S., Chicago, Dec 6, p 33

Vulcan Detinning Company, Aug 30, p 59

W.

Wade flushing trap combination, Nov 15, p 50*

Wages:

Bangor, Maine, July 12, p 44

Great Britain, Decline in, Nov 1, p 36

Molders, Cleveland, Aug 30, p 40

Railroad employees, Advance, Nov 22, p 31

Sheet metal workers in New York City, Aug 30, p 57

Tin plate scale, July 5, p 44; 12, p 59; 19, p 53; 26, p 58; Aug 2, p 54; 9, p 49; 23, 55; Sep 13, p 55; 20, p 60; 27, p 64; Oct 4, p 41; 18, p 55; 25, p 51; Nov 1, p 35, 54

Wales, Manufacture of tin plate in, July 26, p 58

Wall, Removing stains on, Sep 6, p 57

Walworth Mfg. Company, Nov 1, p 45

Warren, A. G. The Paxson-Warren sand blast system, July 5, p 35*

Washbasins, Apron pattern porcelain enameled, Aug 30, p 52*

Wash boiler pattern, July 12, p 51*

Washington State Master Plumbers' Association, Sep 13, p 50

Washstand design for workshop, Aug 16, p 50*

Water, Cause of milky, Dec 13, p 50

Water closet cisterns, Repairing, Nov 8, p 45*

Water closet floor slabs, Sep 20, p 51*

Water closets:

Nethery hydraulic flush valve, Aug 30, p 51*

Pneumatic closets, July 26, p 51*

Quadruplex flushing apparatus, Dec 13, p 41*

Range closets, Dec 13, p 40*

Repairing flush tanks Nov 8, p 45*

Standard enameled, Oct 25, p 55

Wash down syphon, July 5, p 52*

Water fronts:

Construction of, Sep 20, p 52*

Cracking of, Oct 18, p 57*

Water heaters:

Domestic gas, July 19, p 44*

Duplex, Dec 13, p 39; 20, p 39*

Gem, Aug 2, p 48*

Holden combination, July 19, p 45*

Thatcher, Aug 30, p 50

Tobey, Aug 16 p 50

Water motor, Spencer, Oct 11, p 60

Water pipe, Thawing frozen, by electricity, Dec 13, p 39

Water purifying apparatus for the army, Dec 13, p 34

Water stealing in New York City, Aug 2, p 47

Water waste in New York City, Dec 13, p 27

Waterbury Brass Company, Sep 6, p 49

Weather vane, Constructing a, Oct 25, p 50*

Wells & Newton Company, Oct 11, p 47

Western Stove Company of Canada, Sep 6, p 40

Western Trade Golf Association, Oct 11, p 48; 18, p 48; Nov 1, p 48*

Wheelbarrows:

Archer steel, Aug 16, p 42*

Ohio steel scoop, Oct 25, p 47*

Whipple, W. L., Providence, R. I., Aug 23, p 54

White Mountain Freezer Company, Sep 13, p 45

Wilson, G. L., Address by, Aug 16, p 48

Wind mills:

Carroll, Nov 8, p 45

Samson, Nov 8, p 44

Window, Sykes steel, Aug 23, p 55*

Window display:

Cards in the window, Dec 20, p 31

Delivery wagon, Nov 1, p 43*

Hanging goods from chains, Oct 25, p 47*

Old mill, Dec 27, p 35*

Wash day, Aug 9, p 45

Window opening device, Lorell, Sep 20, p 61*

Window screen, Wright fly escape, Oct 4, p 64*

Window ventilator, Field, Nov 29, p 39

Wing, L. J. Insurance as related to the acetylene generator manufacturer, Aug 16, p 45

Wiping joints on large pipes, Nov 8, p 42*

Wire hoops, Herrick, July 5, p 39*

Wisconsin, Rights of employers, July 5, p 31

Wolf, John M., & Co., Dec 27, p 29

Wood, Alan, Death of, Nov 8, p 40*

Wood, W. D., sheet mills, Sep 27, p 62

Woolley, C. M., president American Radiator Company, Nov 8, p 47; 15, p 45*

Workmen. (See Labor question.)

Wrenches:

Dudly adjustable pipe, Dec 6, p 41*

Dudly combination, Aug 9, p 57*

Fruit jar, Aug 9, p 45*; Nov 8, p 38*; Dec 6, p 35*

Keystone crocodile, Aug 30, p 47*

Mossberg, Dec 6, p 44*

Triumph cap wrench, Nov 29, p 50*

Tryon, July 26, p 47

Y.

Young men, Demand for bright, Aug 23, p 40

Youngstown Iron Sheet & Tube Company, Aug 2, p 55; 16, p 55; Dec 13, p 47

Youngstown Iron & Steel Roofing Company, Oct 4, p 51

Z.

Zinc polishing, July 12, p 55

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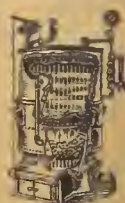
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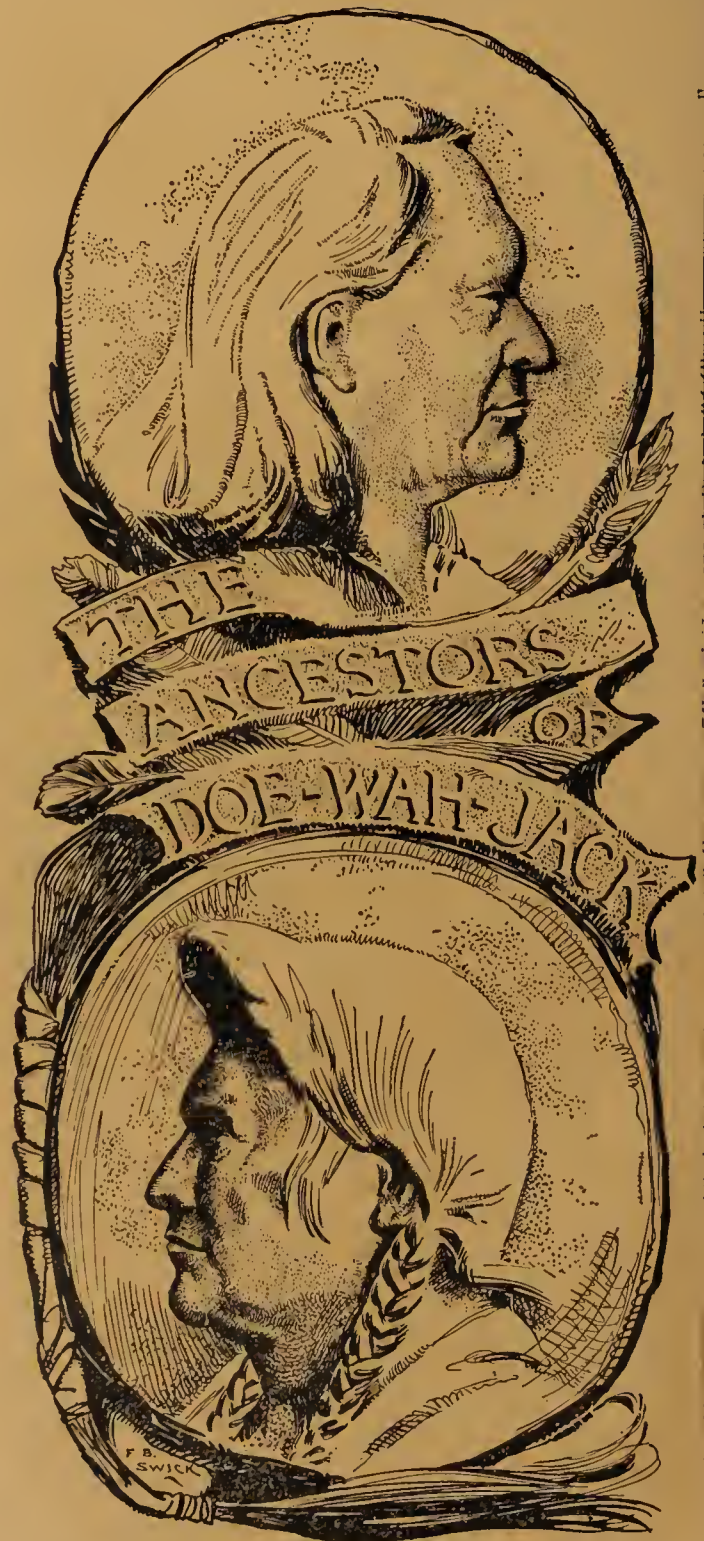
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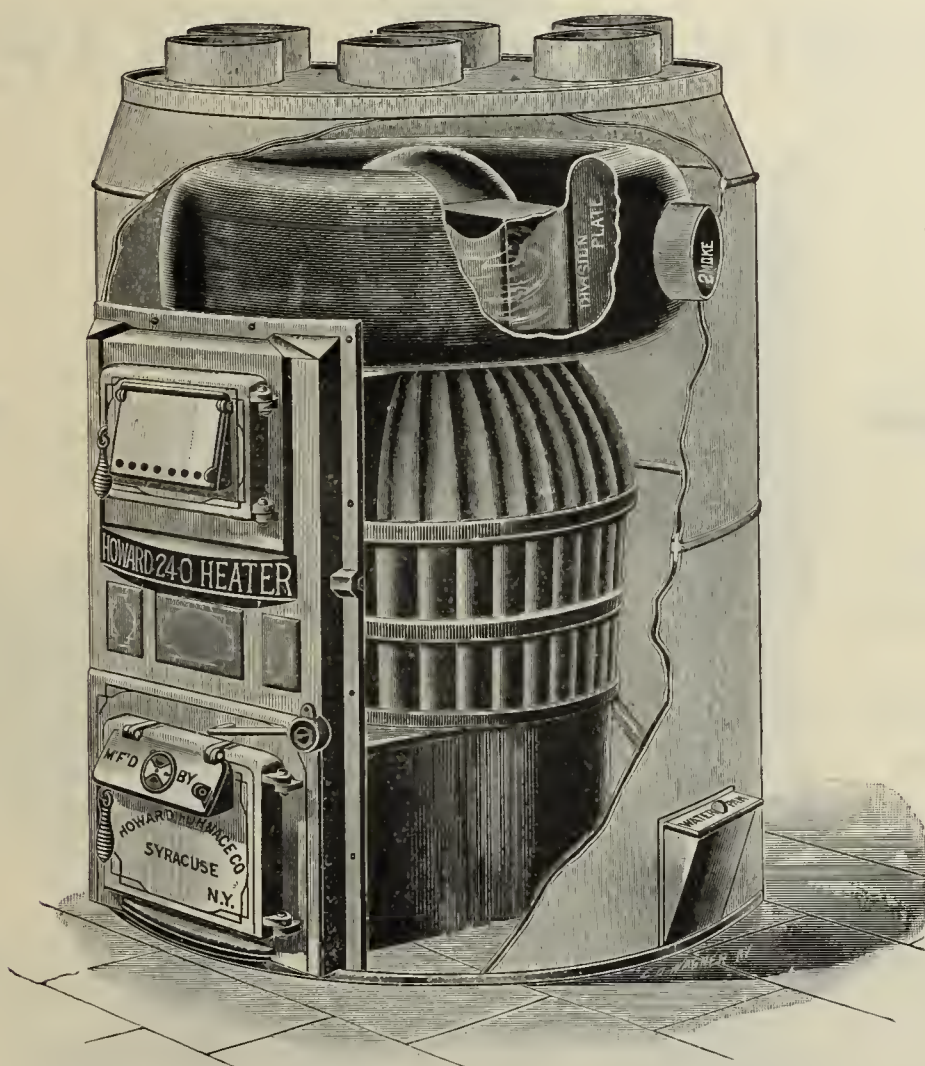
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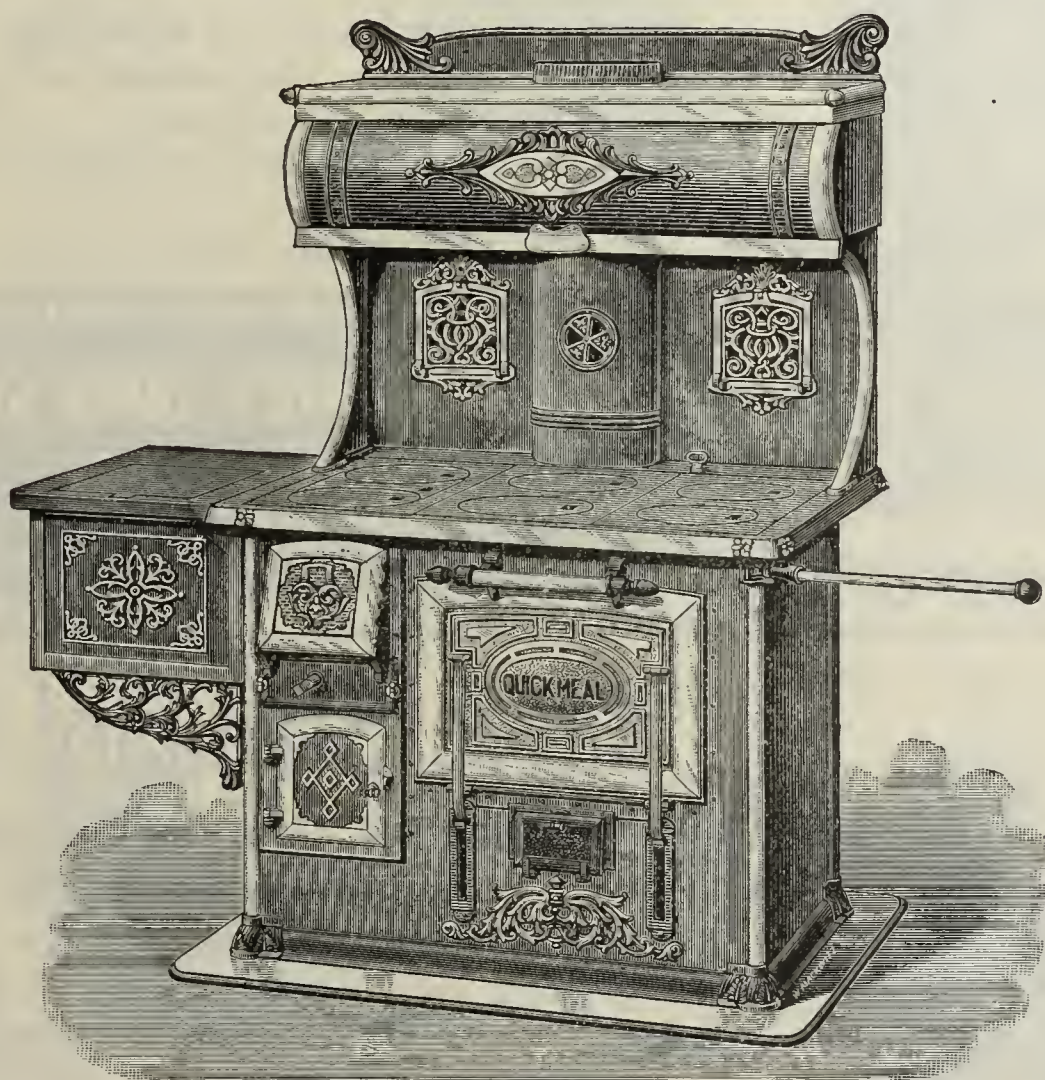
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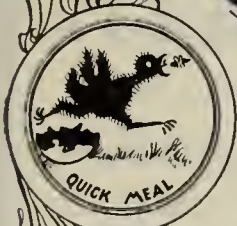
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WESTERN SALES AGENT; W. D. SAGER,

38 AND 40 MICHIGAN ST., CHICAGO, ILL.



Magee Standard Oak.

Made Air Tight. Burns Coal, Coke or Wood.

A FEW OF MANY GOOD FEATURES:

Double Feed Door, fitted with Check Draft and Mica Illumination—Screw Draft and Lever Handles—Deflector Ring—Air Tight Ash-Pit—Fitting faces **true**d until Air Tight.

Perfectly mounted and fitted—will not warp or buckle. Nickel parts and Top Ornament add materially.

"Not Like Others—Better Than Others."

IF INTERESTED WRITE US

DO IT NOW.

MAGEE FURNACE CO.

32-38 Union Street, - - - - BOSTON.

Western Agency, 86 Lake Street, CHICAGO.

STEAM AND WATER BOILERS. FURNACES, RANGES, STOVES, ETC.

The Largest and most complete line under one name in the United States

The Dangler Oil Heater, 1902

Height, 27 in.
Weight, 10 lbs.
None better.
Made of polished
Steel, with either
Brass or Tin
Tank.



Ornamental,
Durable,
Powerful and
Simple in
Operation.
For sale by
Jobbers and
Dealers everywhere.

THE DANGLER STOVE & MFG. CO., CLEVELAND, OHIO, U. S. A.

== 1903 ==

Reliable Oil Heaters



RELIABLE Oil Heaters have always been conceded Leaders. This season they are finer than ever. TO THE RELIABLE IS DUE THE CREDIT OF THE PERFECTION AND POPULARITY OF THE OIL HEATER TO-DAY. Our Gas Heater line is the largest and most complete. Write for catalogue and prices.

MADE BY

THE SCHNEIDER & TRENKAMP CO.

CLEVELAND CHICAGO SAN FRANCISCO

SOLD EVERYWHERE

RICHMOND

Heaters that HEAT.



Get in line and be up to date in the boilers
you buy as you are in other things.

WRITE TO-DAY FOR CATALOGUE X,
And learn something about our New Heaters that HEAT.

THE RICHMOND COMPANY, NORWICH, CONN.

NEW YORK, 737-38 Park Row Bldg.
PHILADELPHIA, 18-24 S. 7th St.

PITTSBURG, 210 Ferguson Bldg.
CHICAGO, Chicago Heater & Supply Co.
ST. LOUIS, Rumsey & Sikemeier.

THE H.B. SMITH CO.,
WESTFIELD, MASS., U.S.A.

Catalogue furnished only upon application to
Heating Contractors, Engineers and Architects

92 Pages. Size 9 x 12 Inches.

**COTTAGE
BOILERS.**

STEAM BOILERS (8 SIZES), 550 SQ. FT. RADIATION SUPPLIED.
WATER BOILERS (8 SIZES), 900 SQ. FT. RADIATION SUPPLIED.

PACIFIC COAST AGENTS
HOLBROOK, MERRILL & STETSON,
SAN FRANCISCO, CAL.

EUROPEAN AGENTS
AUG. EGGERS,
BREMEN AND NEW YORK CITY.

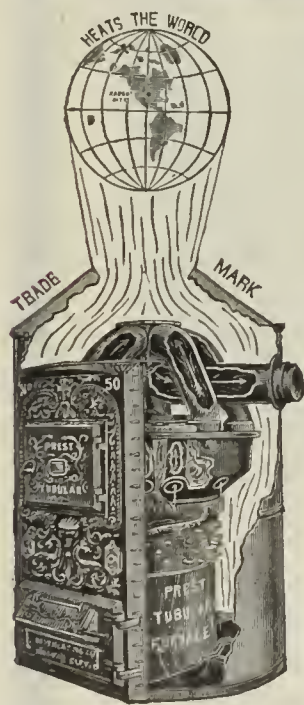
SALESROOMS :

THE H.B. SMITH CO.,

**133 CENTRE STREET,
NEW YORK.**

**510 ARCH STREET,
PHILADELPHIA.**

It is a warm subject to force upon your attention at this time of year, but upon the heating of the houses now under way depends the satisfaction of your customers. Your customers will not blame you for hot houses in Summer, but they **WILL** blame you for cold houses in winter. We have manufactured heating and cooking apparatus for many years, and we expect to do so for many years to come, as we believe the policy of careful attention to details and the production of the best goods will continue to be appreciated. Boynton Furnace Company's Heaters (Warm Air, Hot Water, and Steam), Ranges, etc., are made right and sold right. Our customers know this. It is those who do not that we address. If in the market for a complete line, write us. The Boynton Furnace Co., 207 and 209 ^{WATER ST.,} NEW YORK.



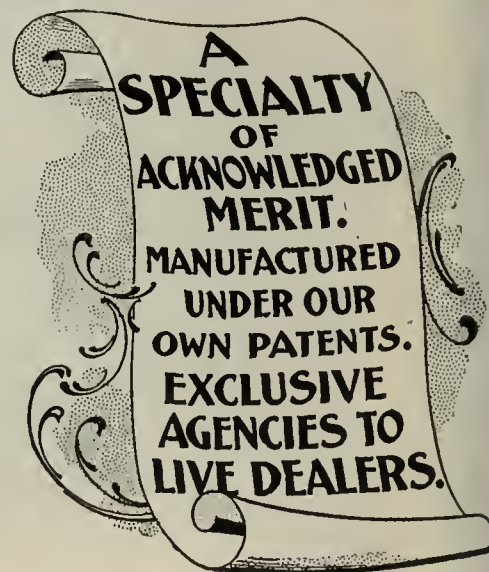
PREST FURNACE COMPANY

MANUFACTURERS

Prest Tubular Furnaces,

HOT AIR, STEAM and
HOT WATER HEATERS.

Kansas City, Mo.



KANSAS CITY, MO., March 21, 1902.

AUER REGISTER CO., Toledo, O.

GENTLEMEN—Enclosed please find draft to cover last shipment of Registers, which have just arrived in first-class shape.

We have a duplicate order of the one just received, due before April 1st, and we wish you would send them as soon as possible, as we already have most of them spoken for. Also see that our order to be shipped May 1st goes forward on time.

We think we will have a ready sale for "The Auer Registers," as they make a very good impression on dealers and customers, and there is a tendency at present to do away with the floor registers as much as possible.

Yours very respectfully,

PREST FURNACE CO., M. A. FOSTER, Treas.

Above is one of many similar letters received by

THE AUER REGISTER CO.

Chicago Branch, 123 Franklin St.

Main Office and Factory, TOLEDO, OHIO.



Royal Heaters.

HART & CROUSE CO.,

235 Water St.,
New York.

78 Lafayette St.,
UTICA, N. Y.

79 Lake St.,
Chicago.

The Leading Line of Heating Apparatus.

**HOT WATER,
STEAM,
HOT AIR.**



Emperor Furnaces FOR WOOD.

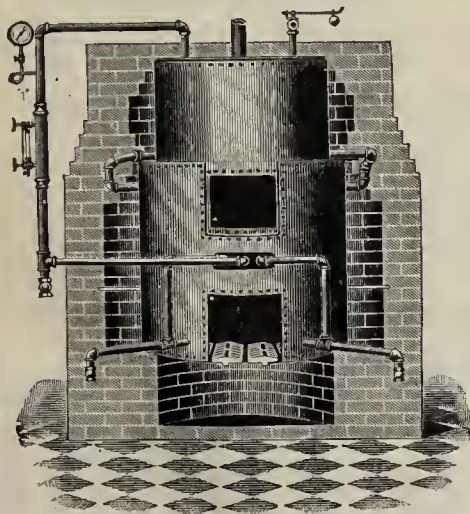
Simple, Safe, Durable. Economical in Fuel.

The Best and Cheapest Line of Wood Furnaces.
Furnished for either Brick or Galvanized Iron Casing

SEND FOR CATALOGUE.

Bergstrom Bros & Co.

NEENAH, WIS.



**THE
HAXTUM**

**A Steel Brick-Set Boiler for Steam and Water
Heating—Hard or Soft Coal.**

HAS AN ESTABLISHED REPUTATION.

SOLD ON MERIT.

PRICES TO THE TRADE ONLY.

KEWANEE BOILER COMPANY

Chicago Store, 169 E. Lake St.

KEWANEE, ILL.

Eastern Representatives:

MODEL HEATING CO.,
Philadelphia, Pa.
New York, N. Y.
Buffalo, N. Y.
Boston, Mass.

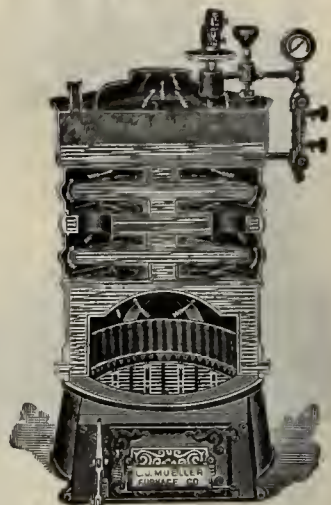


DURABILITY EFFICIENCY ECONOMY

Three Essential Features embodied in the Celebrated

MUELLER **Furnaces and Boilers**

MADE IN ALL STYLES—FOR ALL KINDS OF FUEL.



Write for Catalogue and Prices.

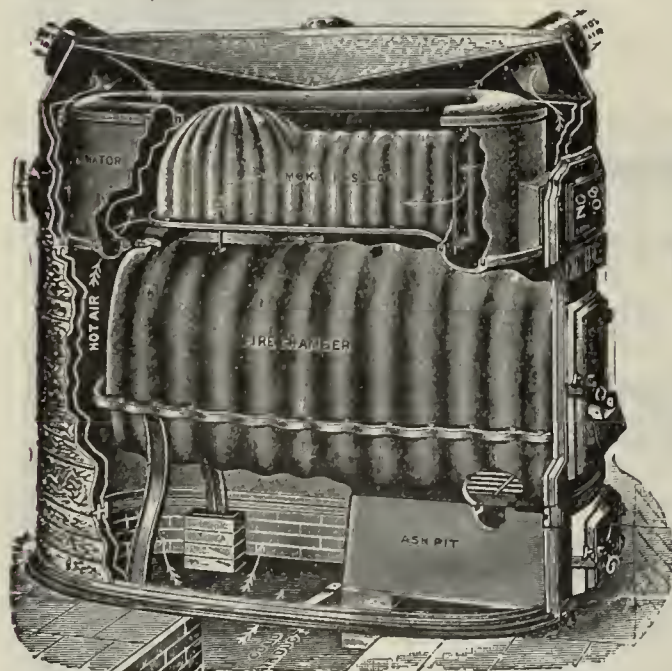
EVERYTHING IN THE HEATING LINE.

ESTABLISHED 1857.

L. J. MUELLER FURNACE CO.

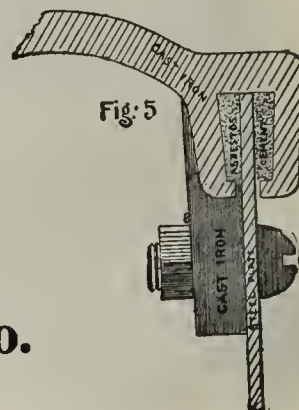
190 REED STREET, MILWAUKEE, WIS.

GILT EDGE



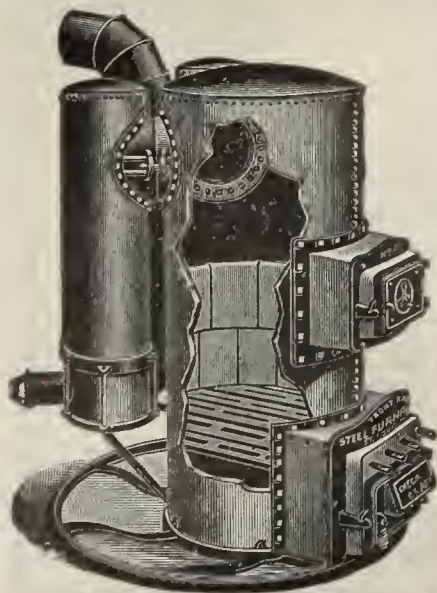
stands for best when applied to furnaces. The many dealers who have installed and the thousands of householders whose homes have been heated by our furnaces show they like the Gilt Edge, as will be seen by the testimonials they have written. Let us send you a few of them.

The Keystone Joint used in Gilt Edge Furnaces is the only permanent gas tight steel and cast iron joint on the market.



R. J. Schwab & Sons Co.
MILWAUKEE

A FEW POINTS OF SUPERIORITY



Fire pots are of fire clay tiling and never burn out.

Radiator surface in proportion to grate surface unusually large.

Only absolutely gas tight furnace made.

Novelty of construction makes an easy seller.

Tested for fifteen years.

Repairs are seldom necessary.

Are guaranteed to burn hard or soft coal.

No direct draft to warp out of shape, nor packed joints to leak gas.

Katalogue and prices will be mailed you upon application.

FRONT RANK STEEL FURNACE CO., 2301 to 2309 Lucas Ave., St. Louis, Mo.



Perfectly Natural.

A keen observer recently remarked that what displeased him most was to see people try to be what they are not. You're seemingly obliged to sell some apparatus on that basis, but never

"GURNEY" HEATERS,

BRIGHT IDEA, DORIC and 400 SERIES,

You may claim what we claim for them in the fullest confidence. It's never necessary for you to stretch their efficiency, their durability, or their economical fuel consumption. It's never necessary to make any misstatements about their ratings, for each heater is honestly rated and will do exactly what we claim for it. "Gurney" Heaters, by the way, are sold, not on "saying" but on "doing."

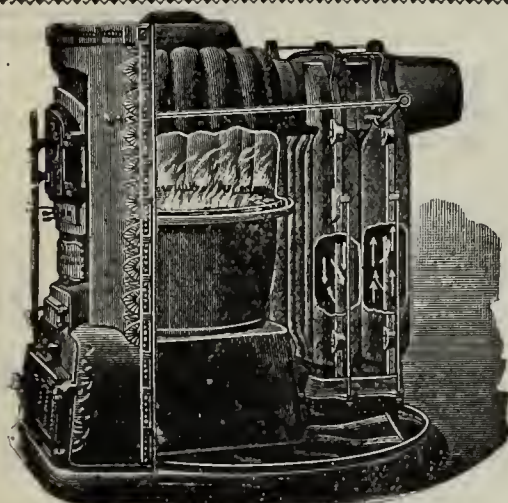
You won't have to look far to find people right in your locality who'll help you sell "Gurney" Heaters by their recommendation of them. Write for latest catalogue and agents' particulars.

Gurney Heater Mfg. Co.,

74 Franklin St., Boston.

111 Fifth Ave., New York City.

Western Selling Agents, James B. Clow & Sons, 358 Franklin St., Chicago, Ill.



DON'T YOU THINK IT ABOUT TIME TO
INVESTIGATE OUR CLAIMS FOR THE

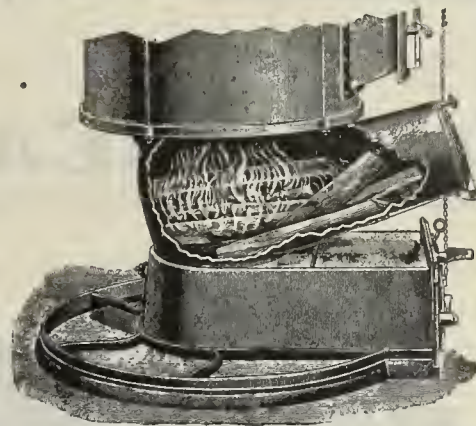
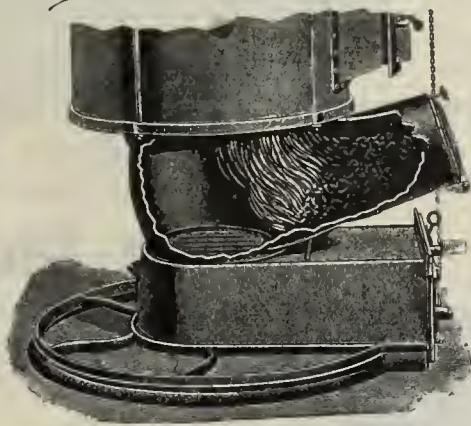
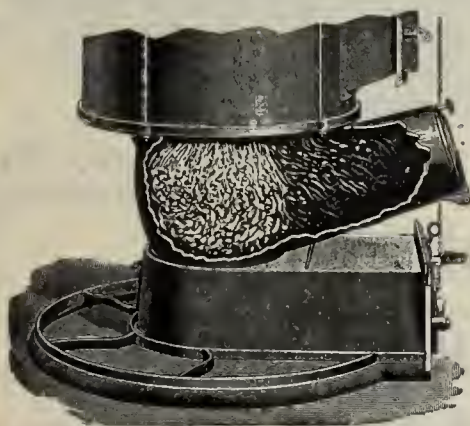
BENGAL FURNACE?

Let us send you free booklet.

FLOYD, WELLS & CO., Royersford, Pa.

Eastern Selling Agents:
GURNEY & CO.,
Washington, Hanover and Elm Streets, Boston, Mass.

NEW YORK OFFICE, 210 WATER ST., R. W. HILLMAN, Manager.



THREE PRACTICAL USES

to which the *Combination Fire Bowl* and *Coking Magazine* used on the **PATRIC FURNACE** may be put.

The first cut shows soft coal undergoing coking process in magazine, with coked coal in main bowl. *A great fuel saver.* Second cut illustrates fire carried only in magazine, for light spring and fall heating, *a great convenience.* Third illustration shows furnace used for wood. *A success for twenty years.*

SEND FOR NEW ILLUSTRATED CATALOGUE.

THE PATRIC FURNACE CO. = Springfield, Ohio.

BRAND STOVE CO.

STOVES, RANGES and
FURNACES.

SEND FOR CATALOG.

MILWAUKEE, WIS.

Why Sell "THATCHER" Furnaces?

Third Reason:

BECAUSE THEY SAVE COAL

"Unless you run a coal yard you will find the ordinary coal eating furnace is hard to sell. 'How much does it cost to run?' is a very early and proper question. You can always meet that question squarely with THATCHER. Thousands of successfully heated homes attest their economy in operation."



WRITE FOR CATALOGUE.

THATCHER FURNACE CO.,

Established 1850.

Warm Air Furnaces, Ranges, Steam and Hot Water Heaters.

Works: Newark, N. J.

240 Water St., New York, N. Y.



The "DAVIS."

Best domestic Water Heater on earth. Constructed on the most scientific principles, and is warranted to give satisfaction wherever used. Made in six sizes. Write for catalog and prices.

DAVIS HEATER CO.,

214 6th Street,
Racine, Wis.



The Robinson Tubular Warm Air Furnaces

give universal satisfaction wherever used.

They are up-to-date in every respect and have many special features not found in other furnaces.

WRITE FOR CATALOG.

ROBINSON FURNACE CO., Chicago.

The New WALKER BOILER

for Steam: for Water

This boiler is attracting much attention among good judges of boilers ; it seems to be just the boiler that every one has been looking for, a plain, straightforward, well made boiler, with proper depth of fire box, push nipple joints, triangular grates, easily cleaned flues, and superior castings.

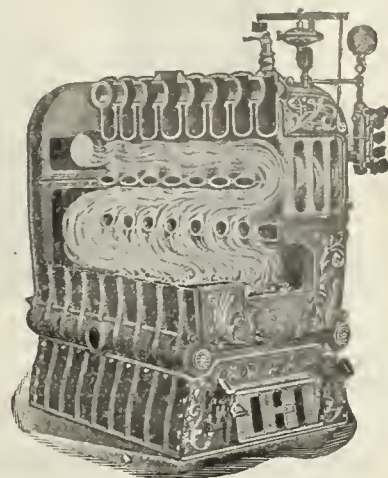
SOLD ON THE HONEST RATING PLAN.

Will be pleased to send catalogue and discounts.
Correspondence and inspection invited.

WALKER & PRATT MFG. CO.,

31-35 UNION ST.. BOSTON, MASS.

"Finest Factory in this line in the world."



WALKER BOILER.



CROWN FURNACES

All cast front.

For hard or soft coal.

Low-down type in four sizes.

Slightly oval in form.

Adapted for heating the finer class of dwellings.

Drums of heavy cast iron, absolutely dust, smoke and gas tight.

Castings extra heavy.

Deep sand joint and deep ash pit.

March-Brownback Stove Co.

POTTSTOWN, PA.

An imported rug, a piece of antique furniture, the suit of clothes your tailor makes up especially for you, and a good many other things you probably value at more than their actual worth because of the exorbitant price you may have paid for them.

Perhaps you may have paid \$100.00 for a furnace and it cost you from \$12.00 to \$20.00 for repairs at the end of seven or eight years.

Perhaps your neighbor has a Dighton, heats his house as well as yours is heated, uses less fuel than what you do and don't spend a penny for repairs in ten years.

No doubt you've had a lot of people tell you the Dighton is a cheap furnace?

We think the Dighton is the cheapest furnace ever made.

DIGHTON FURNACE CO., Taunton, Mass.



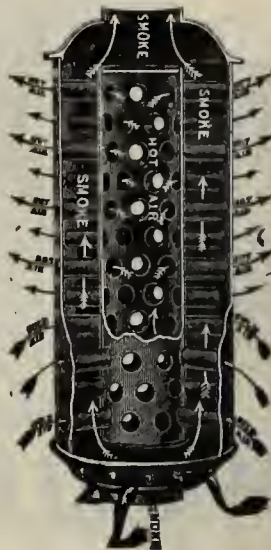
I can hold my hand over my chimney. No waste heat. I use a Rochester Radiator and save half the fuel.

The greatest leak in household economy is the loss of heat up the chimney. This was supposed to be unavoidable until the **Rochester Radiator** was invented; now it is cheaply and thoroughly controlled by the many cross tubes. Dealers find an ever growing trade. Why not put in a stock and get up a boom in your town?

Rochester Radiator Co.,

100 FURNACE STREET,

ROCHESTER, N. Y.



4,866 sq. ins.



IF YOU ARE NOT SELLING THE

Peck-Williamson Underfeed Furnace

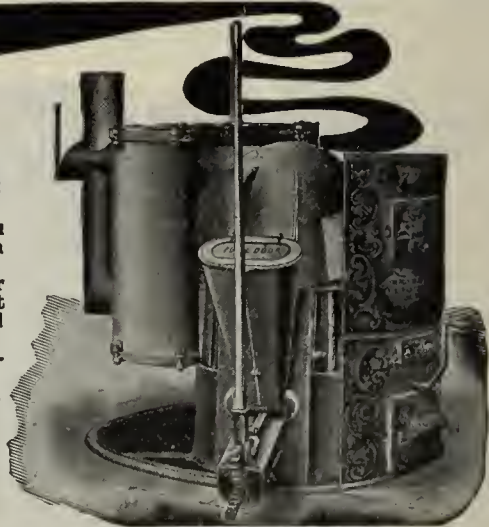
you have not the trade and are not making the money you might. Just a pull or two of the lever feeds the new coal from underneath.

The Underfeed Furnace consumes less fuel than any other furnace ever built. The coal is burnt more slowly. All the heat units from it, as well as from the smoke, are utilized and all smoke eliminated.

Our handsome booklet explains its splendid heating qualities and coal saving.

You may have this booklet and our special plans for selling. Ask for booklet about our Laundry Dryer also.

THE PECK-WILLIAMSON COMPANY,
CINCINNATI, OHIO.



SOMETHING
NEW

Sheet Steel Draft Registers with Screws Complete.

PATENTED DEC. 17, 1901.

Threads are cut and
disk is securely
fastened
*Without cotter pins
or washers,*
Yet it is loose or tight
as wanted.

SEND FOR PRICES.



STOCK SIZES.

2½ in.	4 in.
3 in.	4½ in.
3¼ in.	4¾ in.
3½ in.	5¼ in.
3¾ in.	

Any size made to order
in quantities.

Manufactured
by

The H. A. MATTHEWS MFG. CO., Seymour, Conn., U. S. A.

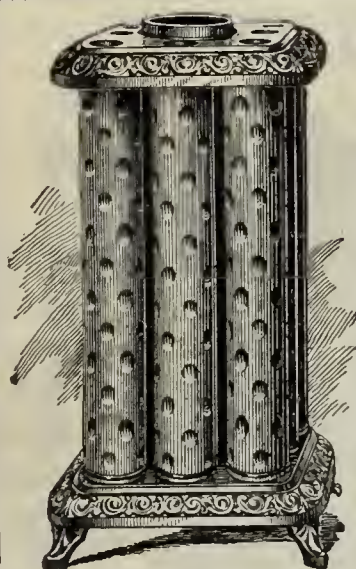


WINCHESTER

A few years ago the fitter was distinguished who had used a "WINCHESTER" heater. To day he is distinguished who has not. We are glad to note that those who drink at the fount return for another draught. For steam or water. Smith & Thayer Company, Boston, Mass; 105 Beekman St., New York.

HEATER.





COAL WILL BE HIGH.

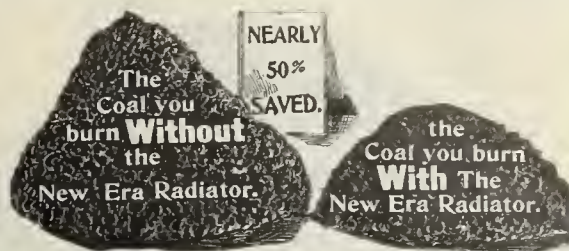
Don't you think if you can show your customers an article next fall that will enable them to get as much heat out of one ton of coal as they did last winter out of two tons, they will be glad to buy?

New Era Radiators

WILL DO IT.

Obtain full information early and be prepared to present facts and meet the demand.

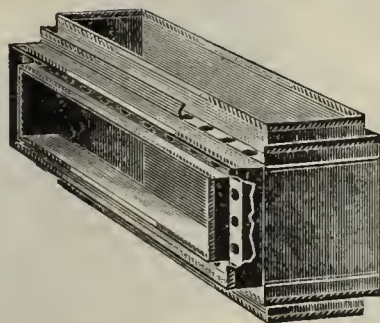
WILMOT CASTLE & CO., 76 Elm Street, Rochester, N. Y.



FURNACES

EXCELSIOR HEATING SPECIALTIES

PIPE



Excelsior

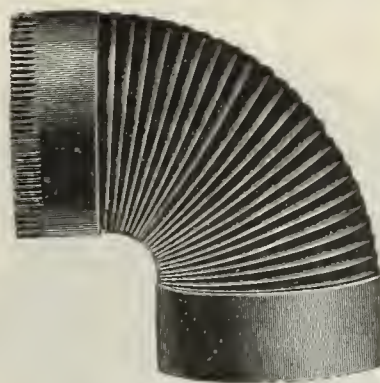
FURNACE PIPE,
HOT AIR REGISTERS,
STOVE PIPE ELBOWS,

ARE ALL SELLING AT

MUCH BELOW

their real value.

This is also true of many other things which we make, as our Quotation Sheet will demonstrate.



EXCELSIOR IDEAL ELBOW.

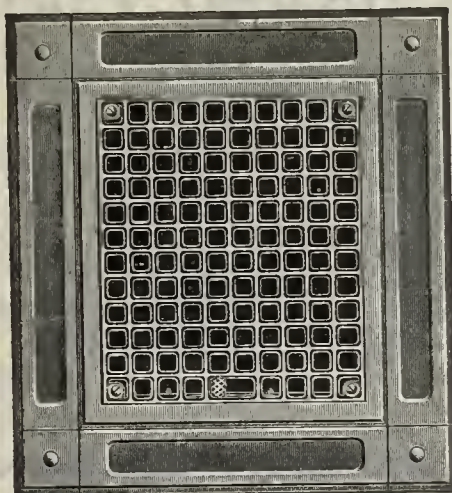
ELBOWS

EXCELSIOR STEEL FURNACE CO.
38-40 W. MONROE ST.-CHICAGO.

REGISTERS

H. & C. WROUGHT STEEL REGISTERS

FURNISHED WITH
WROUGHT STEEL
or WROUGHT BRASS
FACE PLATES, AND
IN ALL FINISHES.



STRONG, LIGHT,
HANDSOME in SIM-
PLICITY of DESIGN.

GENERAL SALES AGENTS
STANLEY WORKS
New Britain, Connecticut.

THE HART & COOLEY CO., New Britain, Conn. 79 Chambers St., New York. 19 Lake St., Chicago.

REFRIGERATORS,
BLUE FLAME OIL STOVES,
GASOLINE STOVES.

LARGEST JOBBERS
in
NEW ENGLAND.

GAS RANGES,
FURNACES, STOVES,
RANGES AND REPAIRS.

HENRY N. CLARK CO., 56 and 58 UNION ST., Boston, Mass.

The Helios-Upton Co.'s

First on the Market. 150,000 Sold.



430 FLAT BACK.

3 inches in diameter.

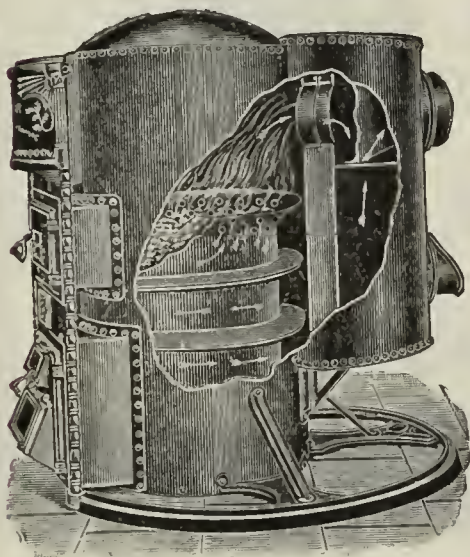
STANDARD Oven Indicator

has a dial graduated in the simplest possible manner, as can be seen. This graduation was adopted because every oven has its own peculiarities, and an indicator adjusted to one oven might be incorrect for another. The *Standard* can be adjusted to any oven and has no complicated parts. Made in 3 styles.

Send for circular.

HELIOS-UPTON COMPANY,

Peabody, Mass., U. S. A.



WEIR ALL STEEL GAS AND SOOT CONSUMING FURNACE.

THE HEAVIEST STEEL FURNACE MADE.

Absolutely gas and dust tight. A great heat-producer but a fuel saver.

MANUFACTURED BY

THE MEYER FURNACE CO.,

1300-1304 S. Washington St.,

SEND FOR CATALOGUE.

PEORIA, ILLS.

"The Handy Furnace Pipe."

MADE WITH A VIEW OF BEING SAFE.

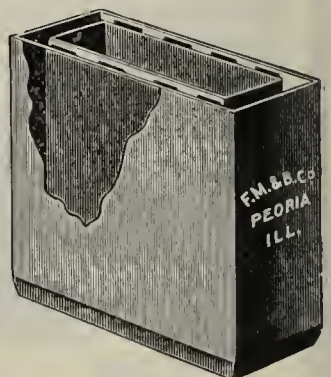
The saving of labor in putting it up really makes it the cheapest hot air pipe on the market.

MANUFACTURED BY

F. MEYER & BRO. CO.,

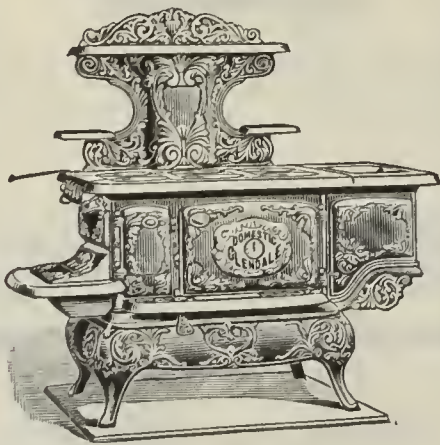
SEND FOR CATALOGUE.

PEORIA, ILLS.



GLENDALE

Stoves and
Ranges

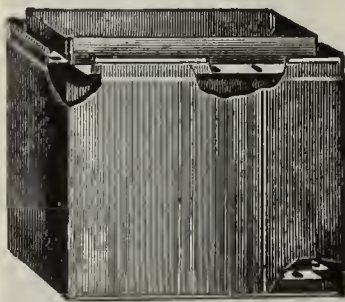


Manufactured by
SOMERSET STOVE FOUNDRY CO.,
SOMERSET, MASS.

Send for a Sample.

Chicago Furnace Supply Co.

64-66 West Monroe St.,
CHICAGO, ILL.



Send for descriptive catalogue.

MANUFACTURERS of ROUND FURNACE
PIPE, ADJUSTABLE ELBOWS, WALL
PIPE, REGISTERS, FITTINGS and
SUPPLIES.

YOU'LL never run up against the heating proposition that
you can't meet successfully with the Household
Furnace. It's built to furnish Healthy Heat and
plenty of it at the least expense for fuel.

This is the Furnace
you ought to sell.

White, Warner Co.

TAUNTON

MASS.

HOUSEHOLD FURNACE

Monarch Air Blast Furnaces.

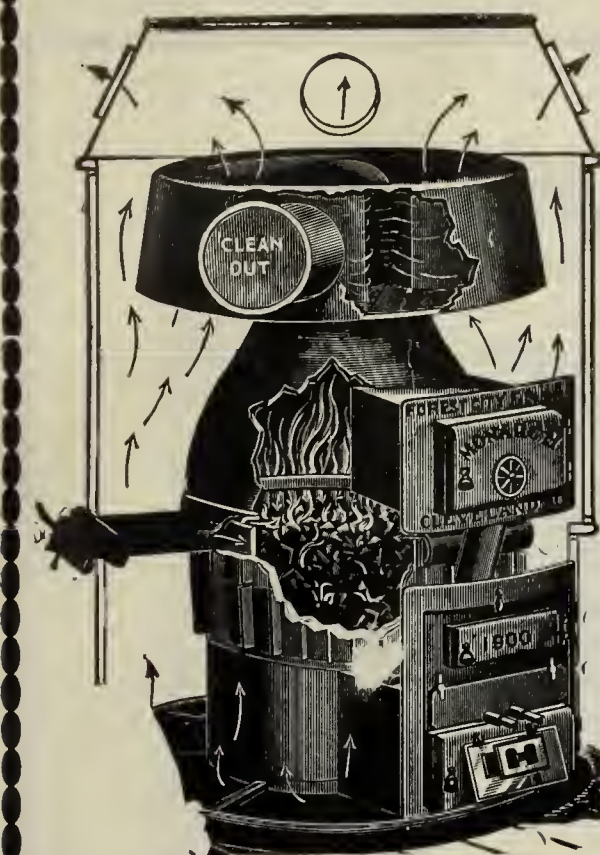
All Cast Iron.
For Hard and Soft Coal.

Send for 1902
Catalog and discounts.

The Forest City
Foundry and Mfg. Co.

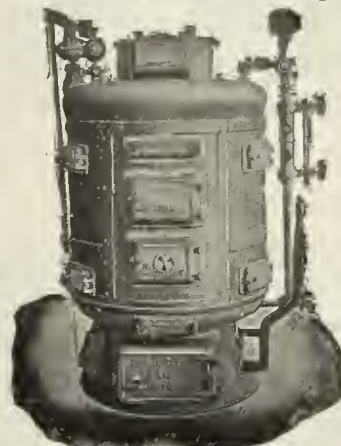
81 Elm Steet,
CLEVELAND, OHIO.

Gray Iron Castings to order. High
grade only.



Pierce BOILERS and RADIATORS

for Steam and Water Heating.



Pierce Improved Florida Steam Boiler.
LARGE HEATING CAPACITY.
ECONOMIC IN FUEL CONSUMPTION.

Endorsed by the foremost Architects
and Heating Engineers.

Write for New Illustrated Catalogue.

Pierce, Butler & Pierce Mfg. Co.,
Syracuse, N. Y.

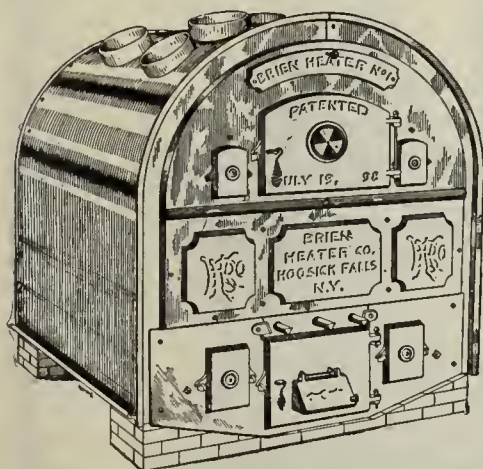
New York. Boston. Philadelphia.

Brien Heater.

A perfect, all cast WOOD or
COAL burner. There is no
other Hot Air Furnace as
low down as the "BRIEN."

Write for territory, catalog and prices.

BRIEN HEATER CO.,
HOOSICK FALLS, N. Y.



Championnd Marquart Double Flue Ranges.

Only Double Flue Ranges in the
Market. The Greatest Fuel Saver.
Draw-Out Grate.

Handsomely Finished Through-
out. Prices Within Reach
of all.

CHAMPION
STEEL RANGE CO.,
CLEVELAND, O.



J. M. Litchfield, New York, N. Y.
Kettleson & Degetan, Chihuahua, Mex.
Moore-Bandley Hdw. Co., Birmingham, Ala.

We are represented by the following
houses:
Lee-Glass-Andresen Hdw. Co., Omaha, Neb.
James Graham & Son, San Francisco, Cal.
Richards & Conover Hdw. Co., Kansas City.
Michigan Distributing Co., Lansing, Mich.
Chicago Stove and Range Co., Chicago, Ill.
Jacob Ketterer, Chicago, Ill.
Corbett, Felling and Robertson, Portland, Ore.
Palmer Hdw. Co., Savannah, Ga.

The Champion Hot Water Combination Heaters.

They Fit Any
Furnace.

Base section when
used without ring
sections



Ring Section.



These Heaters are made in five sizes diameter, and
from 100 to 700 square feet radiation capacity.
Will heat those cold rooms or an addition to the build-
ing. Will increase the capacity of any furnace. Are
cheaper than coils and will do more work.
Write for new circular. Manufactured by

FRANK D. STOLZ,
115 Lake St., Chicago, Ill.

A B C



THE HOW AND WHY
OF PERFECT VENTILATION

"A B C" Disc Ventilating Fans

will maintain a higher degree of effi-
ciency, keeping more air in circulation at
any given speed of operation at less cost
than any other fan made, by reason of
their superior advantages in mechanical
and scientific construction.
Send for Catalogue No. 140-F.

American Blower Co.,
Detroit, Mich.

New York. Chicago. London.

A B C

A 62-PAGE PAMPHLET

Comprising a Series of Articles and Letters on *Chimney Troubles and Their Remedies* published under the title



Contains a compilation from the columns of THE METAL WORKER, of articles and correspondence relating to house chimneys, defective flues, and kindred topics, comprising a source of information of the most practical and reliable nature, on overcoming difficulties which occur in the working of chimneys, flues, etc.

To all who are interested in flues and drafts, in their relation to stoves, furnaces and house heating apparatus, this book will prove instructive and helpful.

The Contents are as follows

	Page.
POINTS ON CHIMNEYS	7-32
An illustrated article by J. L. Bixby, Jr., describing many details in chimneys, which cause trouble, and giving remedies. An important table is presented, of the sizes of chimneys required in dwelling houses, based upon the amount of work to be done.	
DEFECTIVE FLUES	33-35
This article presents information resulting from a wide, practical experience of the writer, and gives sound advice on some of the details of chimney construction.	
HOW TO IMPROVE A WEAK CHIMNEY	36-40
VARIOUS FORMS OF VENTILATORS or CHIMNEY TOPS	41-45
CONDENSATION IN STOVE PIPES	46, 47
SMOKE PIPE FOR WOOD FURNACES	48
REMEDYING DOWN DRAFT IN CHIMNEY	49-51
CONNECTED FLUES DESTROY DRAFT	52-55
FAILS TO BAKE ON BOTTOM	56-62

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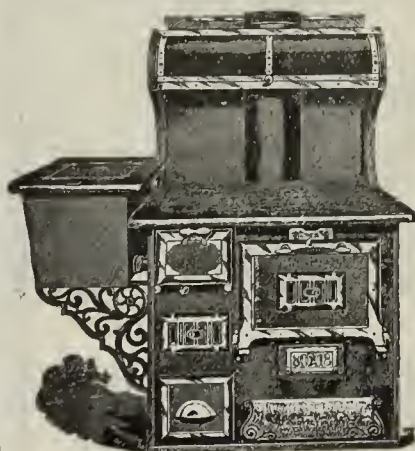
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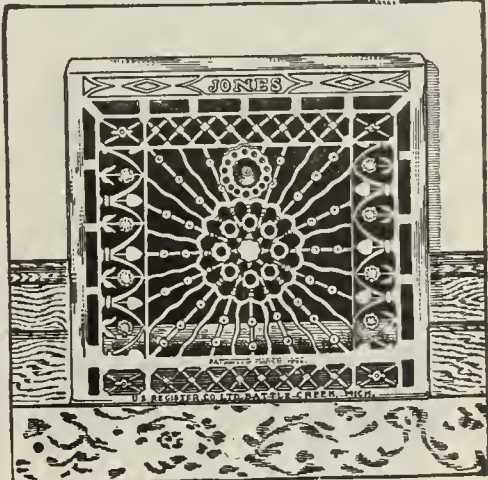


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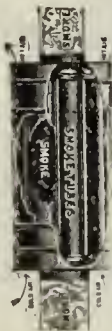
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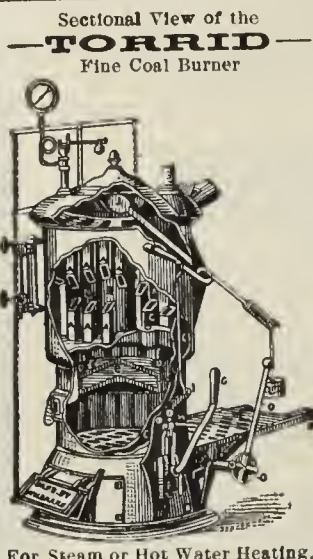
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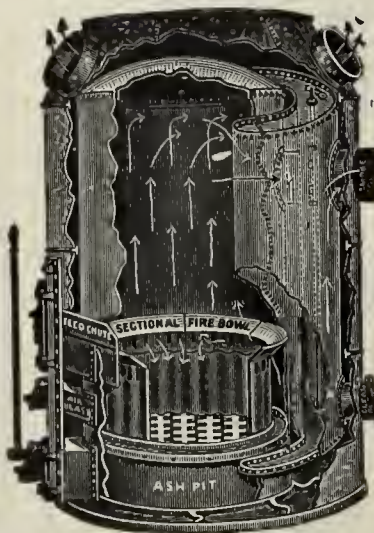
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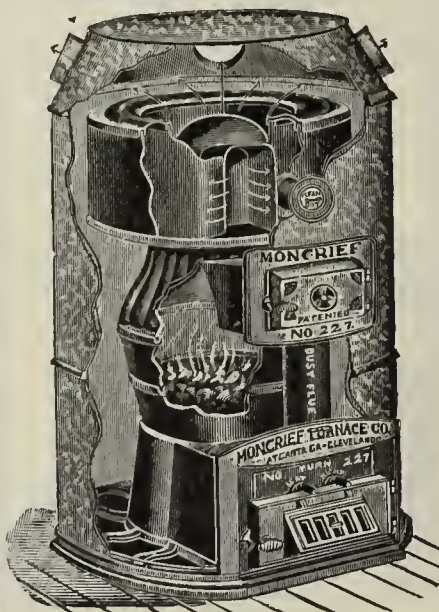


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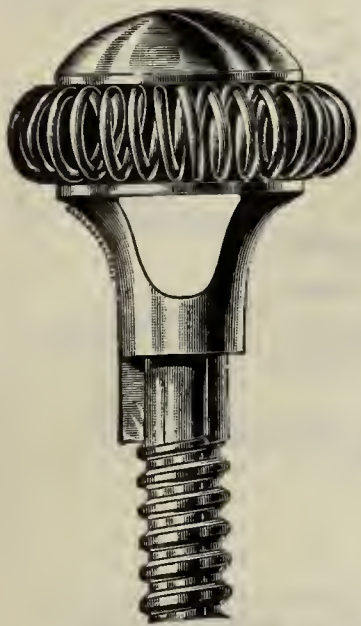
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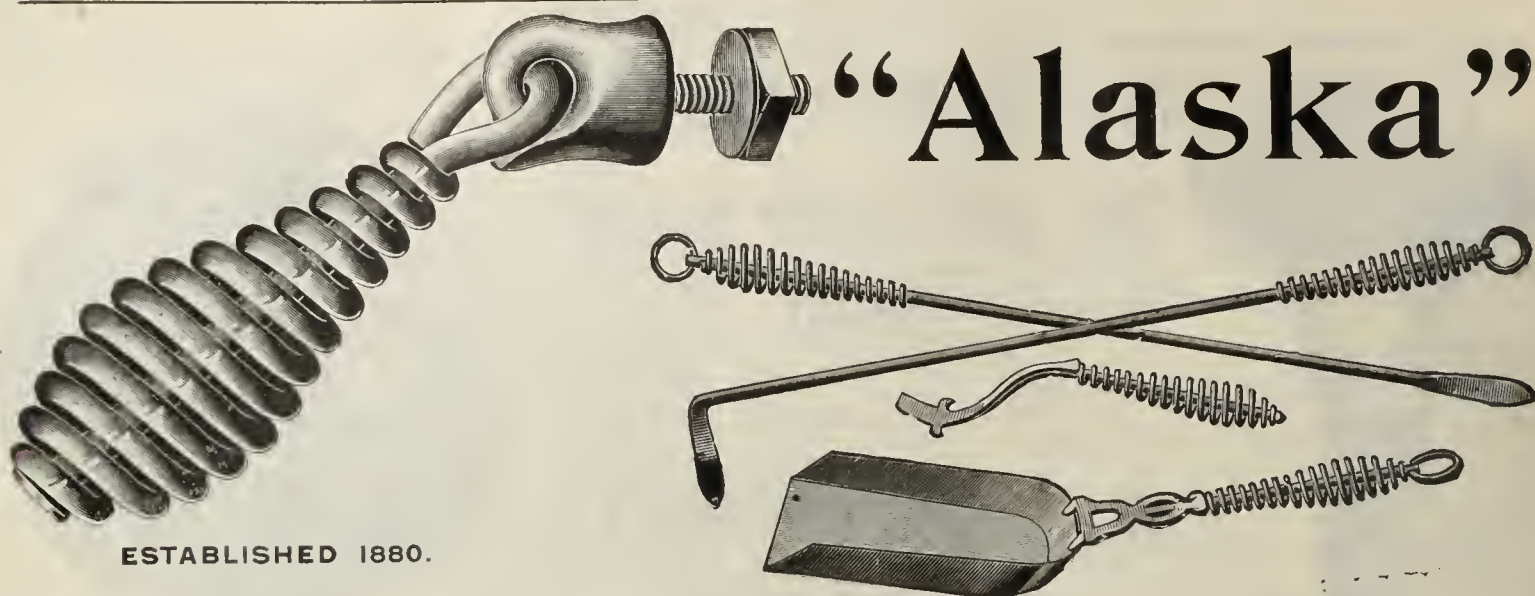
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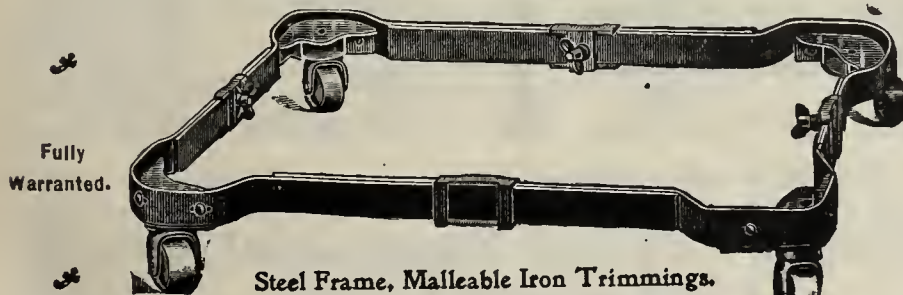
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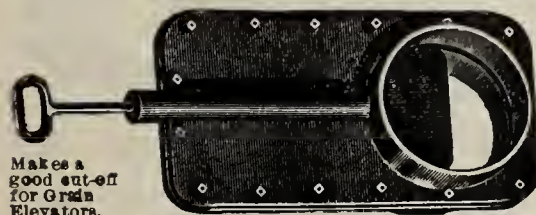


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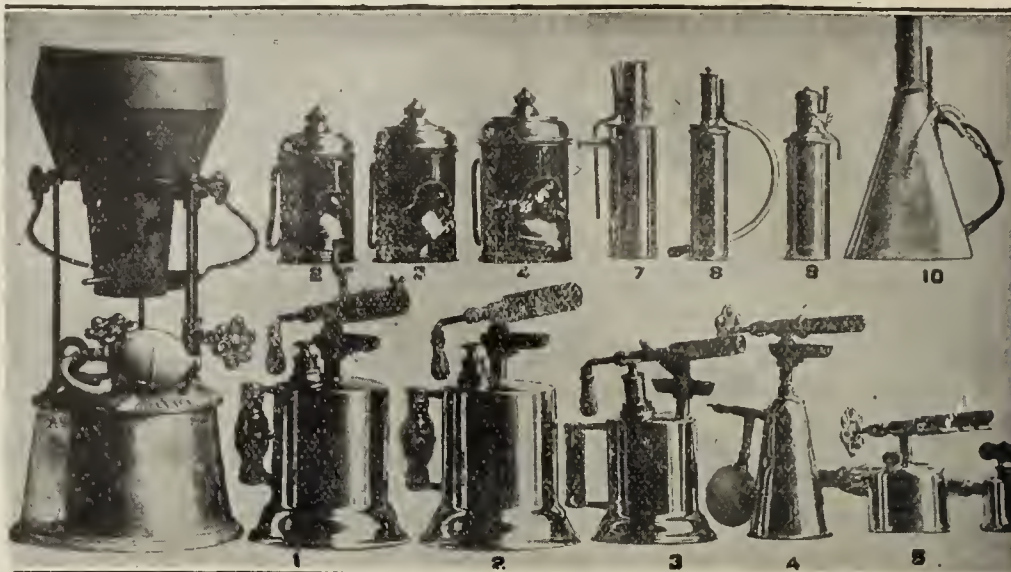
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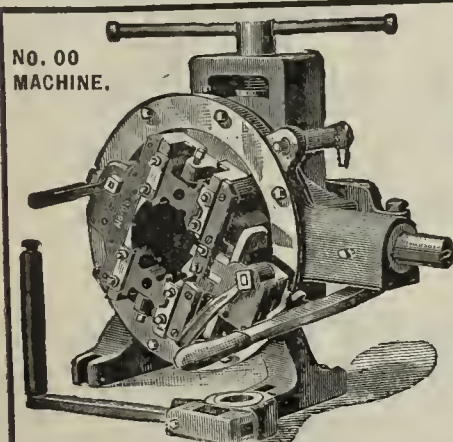
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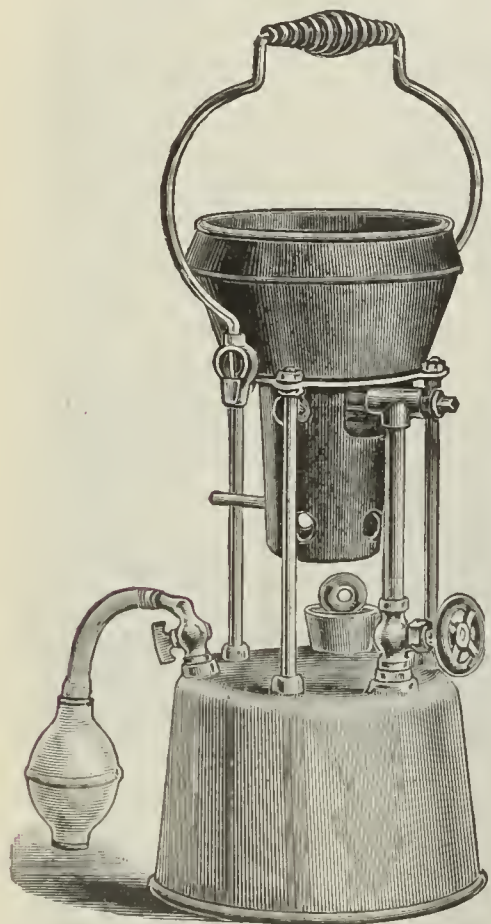
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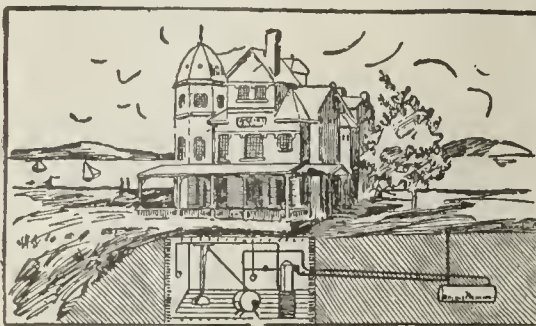
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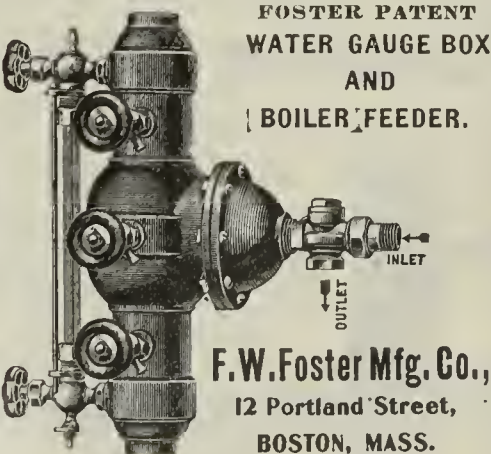
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PART OF CONTENTS:

- | | | | |
|---|---|--|---|
| <p>DANGEROUS BLUNDERS IN PLUMBING.</p> <p>Running Vent-Pipe in Improper Places—Connecting Soil-Pipes with Chimney-Flues—By-Passes in Trap-Ventilation, etc.</p> <p>A Case of Reckless Botching.</p> <p>A Stupid Multiplication of Traps.</p> <p>A Trap Made Useless by Improper Adjustment of Inlet and Outlet Pipes.</p> <p>Unreliability of Heated Flue as a Substitute for Proper Trapping.</p> <p>Need of Plans in Doing Plumbing-Work.</p> <p>HOUSE-DRAINAGE.</p> <p>City and Country House-Drainage—Removal of Ground-Water from Houses—Trap-Ventilation—Fresh-Air Inlets—Drain-Ventilation by Heated Flues—Laying of Stoneware Drains.</p> <p>Requirements for the Drainage of Every House.</p> <p>Ground-Water Drainage of a Country House.</p> <p>Ground-Water Drainage of a City House.</p> <p>Fresh-Air Inlets.</p> <p>The Location of Fresh-Air Inlets in Cities.</p> <p>Air-Inlets on Drains.</p> <p>The Proper Way to Lay Stoneware Drains.</p> <p>The Tightness of Tile-Drains.</p> <p>Danger of Soil-Pipe Terminals Freezing unless Ends are without Hoods or Cows.</p> <p>Objection to Connecting Bath-Waste with Water-Closet Trap.</p> | <p>How to Adjust the Inlets and Outlets of Traps.</p> <p>How to Protect Trap when Soil-Pipe is used as a Leader.</p> <p>Size of Ventilating-Pipes for Traps.</p> <p>How to Prevent Condensation Filling Vent-Pipes.</p> <p>How to Prevent Accidental Discharge into Trap Vent-Pipe.</p> <p>Why Traps should be Vented.</p> <p>MISCELLANEOUS.</p> <p>Syphoning Water through a Bath-Supply.</p> <p>Emptying a Trap by Capillary Attraction.</p> <p>As to Safety of Stop-Cocks on Hot Water Pipes.</p> <p>How to Burnish Wiped Joints.</p> <p>Admission to the New York Trade Schools.</p> <p>Irregular Water Supply.</p> <p>Hot Water from the Cold Faucet, and how to Prevent it.</p> <p>Disposal of Bath and Basin Waste Water.</p> <p>To Prevent Corrosion of Tank Lining.</p> <p>Number of Water Closets Required in a Factory.</p> <p>Size of Basin Wastes and Outlets.</p> <p>Tar Coated Water Pipe Affect Taste of Water.</p> <p>How to Heat a Bathing-Pool.</p> <p>Objections to Galvanized Sheet Iron Soil-Pipe.</p> <p>To Prevent Rust in a Suction Pipe.</p> <p>Automatic Shut-Off for Gas Pumping Engines, when Tank is Full.</p> <p>Paint to Protect Tank Linings.</p> | <p>Size of Water-Pipes in a House.</p> <p>How to Make Rust Joints.</p> <p>Covering for Water-Pipes.</p> <p>Size of Soil-Pipe for an ordinary City House.</p> <p>Where to Place Burners to Ventilate Flues by Gas Jets.</p> <p>How to Prevent Water Hammer.</p> <p>Why a Hydraulic Ram does not Work.</p> <p>Proper Size of Water-Closet Outlets.</p> <p>Is a Cement Floor Impervious to Air?</p> <p>Two Traps to a Water Closet Objectionable.</p> <p>Connecting Bath-Wastes to Water-Closet Traps.</p> <p>Objections to Leaching Cesspool and Need of Fresh Air Inlet.</p> <p>The Theory of the Action of Field's Syphon.</p> <p>How to Disinfect a Cesspool.</p> <p>Slabs for Pantry Sinks—Wood vs. Marble.</p> <p>Test for Well Pollution.</p> <p>Corrosion of Lead Lining.</p> <p>Size of Flush Tank to Deal with Sewage of a Small Hospital.</p> <p>Details of the Construction of a House-Tank.</p> <p>The Construction of a Cistern under a House.</p> <p>To Protect Lead Lining of a Tank, and Cause of Sweating.</p> <p>Stains on Marble.</p> <p>Lightning Strikes Soil-Pipes.</p> <p>How to Fit Sheet Lead in a Large Tank.</p> <p>Why Water is "Milky" When First Drawn.</p> <p>Carving-Tables.</p> | <p>Is Galvanized Pipe Dangerous for Soft Spring Water?</p> <p>How to Arrange Hush Pipes in Cisterns to Prevent Syphoning Water Through Ball Cock.</p> <p>Depth of Foundations to Prevent Dampness of Site.</p> <p>Self-Acting Water Closets.</p> <p>Wind Disturbing Seal of Trap.</p> <p>How to Draw Water from a Deep Well.</p> <p>Cause of Smell of Well Water.</p> <p>Absorption of Light by Gas Globes.</p> <p>Fitting Basins to Marble Slabs.</p> <p>Intermediate Tanks for the Water Supply of High Buildings.</p> <p>How to Construct a Filtering Cistern.</p> <p>Objections to Running Ventilating Pipe into Chimney-Flue.</p> <p>Size of Water Supply Pipe for Dwelling House.</p> <p>Faulty Plan of a Cesspool.</p> <p>Disposing of Refrigerator Wastes.</p> <p>Pumping Air from Water Closet into Tea Kettle as Result of Direct Supply to Water Closets.</p> <p>Danger in Connecting Tank Overflows with Soil-Pipes.</p> <p>Arrangement of Safe Wastes.</p> <p>What is Reasonable Plumbers' Profit?</p> |
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BOILERS.

- On blowing off and filling boilers.
- Where a test-gauge should be applied to a boiler.
- Domes on boilers; whether they are necessary or not.
- Expansion of water in boilers.
- Cast vs. wrought iron for nozzles and magazines of house-heating boilers.
- Pipe-connections to boilers.
- Passing boiler-pipes through walls; how to prevent breakage by settlement.
- Heating-boilers. (A problem.)
- Isolating-valve for steam-main of boilers.
- On the effect of oil in boilers.
- Proportions for rivets for boiler-plates.
- Iron rivets and steel boiler-plates.
- Is there any danger in using water continuously in boilers?
- A supposed case of charring wood by steam-pipes.
- Domestic boilers warmed by steam.

VALUE OF HEATING-SURFACES.

- Computing the amount of radiator-surface for warming buildings by hot water.
- Calculating the radiating-surface for heating buildings—the saving of double-glazed windows.
- Amount of heating-surface required in hot-water apparatus boilers and in steam-apparatus boilers.
- Calculating the amount of radiating-surface for a given room.
- How much heating-surface will a steam-pipe of given size supply?
- Coils vs. radiators and size of boiler to heat a given building.

- Calculating the amount of heating-surface.
- Computing the cost of steam for warming.

RADIATORS AND HEATERS.

- Improper position of radiator-valves.
- Hot-water radiator for private houses.
- Remedying air-binding of box-coils.
- How to use a stove as a hot-water heater.
- "Plane" vs. "Plain" as a term as applied to outside surface of radiators.
- Relative value of pipe on cast-iron heating surface.
- Relative value of pipe on steam-coils.
- Warming churches (plan of placing a coil in each pew).
- Warming churches.

PIPE AND FITTING.

- Steam-heating work—good and in different.
- Piping adjacent buildings: pumps vs. steam-traps.
- True diameters and weights of standard pipes.
- Expansion of pipes of various metals.
- Expansion of steam-pipes.
- Advantages claimed for overhead piping.
- Position of valves on steam-riser connection.
- Cause of noise in steam-pipes.
- One-pipe system of steam-heating.
- Air-binding in return steam-pipes.

- How to heat several adjacent buildings with a single apparatus.
- Air-binding in return steam-pipes, and methods to overcome it.

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- Size of registers to heat certain rooms.
- Determining the size of hot-air flues.
- Window ventilation.
- Removing vapor from dye-house.
- Calculating sizes of flues and registers.
- On methods of removing air from between ceiling and roof of a church.

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- Economy of using exhaust steam for heating.
- Heat of steam for different conditions.
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- Other means of clarifying water.
- Testing gas-pipes for leaks, and making pipe-joints.
- Differential rams for testing fittings and valves.
- Percentage of ashes in coal.
- Automatic pump-governor.
- Cast-iron safe for steam-radiators.
- Preventing fall of spray from steam-exhaust pipes.
- Heating and ventilation of a prison.
- Amount of heat due to condensation of water.
- Expansion-joints.
- Resetting of house-heating boilers—a possible saving of fuel.
- How to find the water-line of boilers and position of try-cocks.

MISCELLANEOUS QUESTIONS.

- Applying traps to gravity steam-apparatus.
- Connecting steam and return risers at their tops.
- Power used in running hydraulic elevators.
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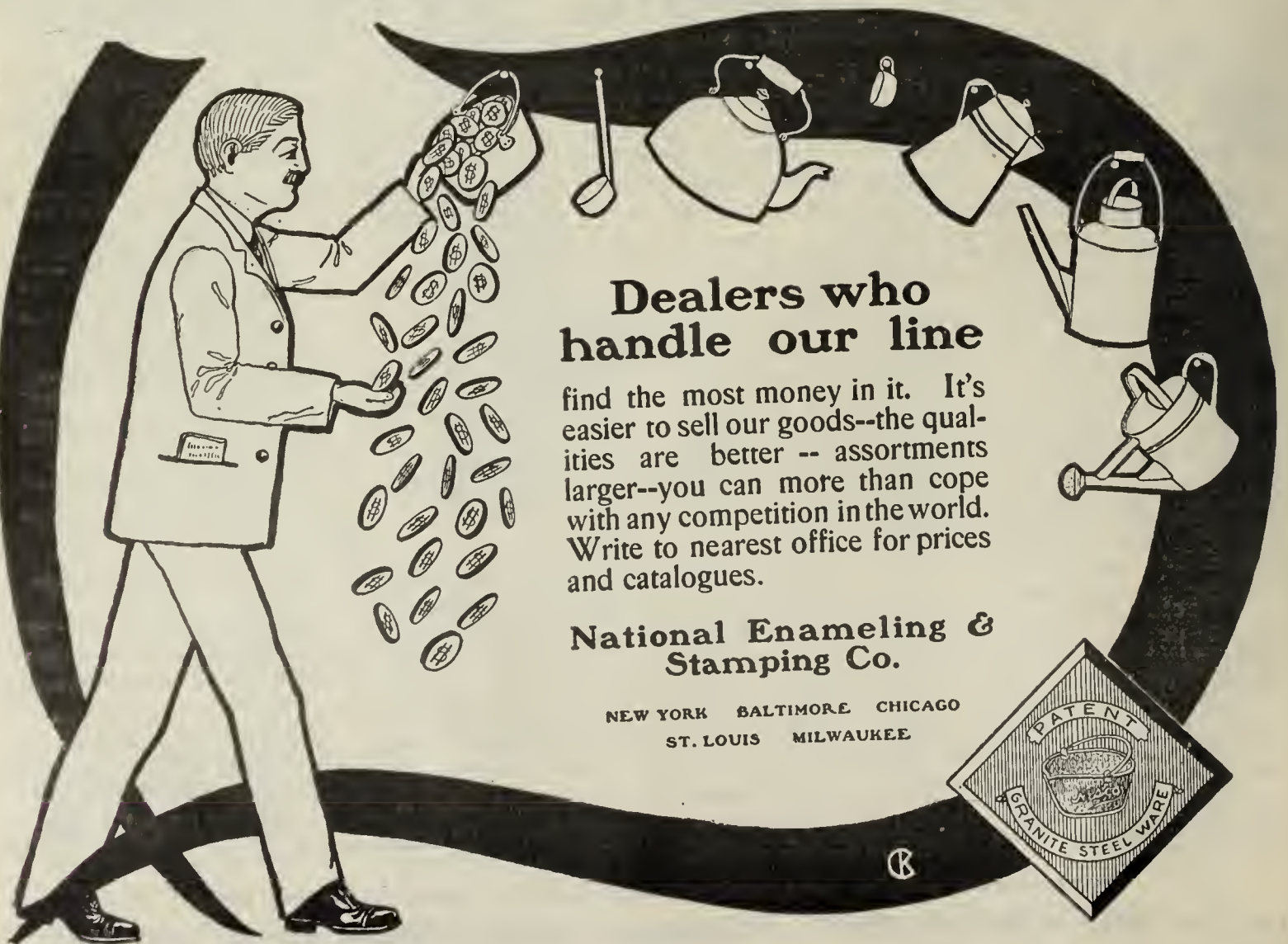
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Volume LVIII.....No. 1
Index to Reading Matter.....Page 60

The Gas and Oil Stove Trade.

Observers have been impressed with the increase in the demand for gas and oil stoves since the inauguration of the coal strike. The rise in the price of coal has prepared the minds of the public in general to receive with more interest information about other kinds of cooking apparatus than the universally used coal stove. Many of the older and more conservative citizens, who have heretofore shown little or no interest in the new fangled cooking devices used by their neighbors, are now inclined to listen attentively to the explanations of a gas range, a gasoline stove or a blue flame oil cooking apparatus given at the store which they have taken the trouble to visit for the purpose of securing information. Those dealers who for a number of years have carried such goods in stock are now reaping the reward of their enterprise. This should suggest to all dealers in stoves and house furnishing goods that something more than a mere display of gas and oil stoves in the store is necessary to reap the full benefit of the conditions which the coal strike has brought about. Most of the manufacturers of what has heretofore been termed "summer cooking apparatus" are willing to furnish circulars explaining the advantages possessed by their goods. The dealer who takes advantage of this opportunity to secure circulars and have them distributed at the houses of prospective purchasers will be making an effort that should materially increase his sales. If the distribution is made by some one who can intelligently explain the goods, and particularly if the visits are made in the forenoon, when the kitchen is in use, the effect will be greater, and it is also possible that orders for repairs for the coal stoves in use could be secured, which would help to defray the expenses of the canvass. A special effort to increase their trade in the line indicated has evidently been made by dealers in different sections, and as a result the manufacturers and jobbers of gas, gasoline and oil stoves, have been well occupied.

Production of Pig Iron by Grades.

James M. Swank, general manager of the American Iron and Steel Association, has rendered the iron trade a great service in collecting the statistics of the production of pig iron according to the different grades. This information is for the first time embodied in the statistical report of the association issued last week. For years this report has given the quantity of spiegeleisen and of Bessemer and basic pig iron annually produced, but it has always been a matter of conjecture as to

how much of the remaining pig iron product consisted of foundry and how much of forge iron. Exact figures are now available. In collecting these statistics for 1901 care was taken to secure figures of production for 1900, so that a comparison can be made of the output of the several grades in these two years. The following table of total production of pig iron in the United States is taken from the report:

Grades.—Gross tons.	1900.	1901.
Bessemer and low phosphorus.....	7,978,209	9,589,939
Basic	1,072,376	1,448,850
Forge	793,092	639,184
Foundry	3,037,689	3,186,348
Malleable Bessemer.....	173,413	256,532
Charcoal	339,874	360,147
White and mottled and miscellaneous....	129,909	97,374
Spiegeleisen and ferromanganese.....	255,977	291,461
Direct castings from furnace.....	8,703	8,522
Totals.....	13,789,242	15,878,354

These figures show that in 1901 over 60 per cent. of the pig iron product was Bessemer and low phosphorus, over 20 per cent. foundry, over 9 per cent. basic, over 4 per cent. forge, over 2 per cent. charcoal, about 2 per cent. spiegeleisen and ferromanganese and 1.6 per cent. malleable Bessemer. Perhaps the most noteworthy fact clearly established by Mr. Swank's figures is that the great increase in the production of pig iron from 1900 to 1901 was practically confined to the grades used for the manufacture of steel, that there was only a slight increase in the production of foundry pig, and that the make of forge iron for puddling purposes fell off. The figures eloquently prove, too, to what a low point relatively the latter has fallen.

The Rights of Employers.

An interesting and important decision bearing on the rights of employers and employees was handed down last week by the Supreme Court of Wisconsin. The decision declares that a State law which prohibits any employer from discharging anybody because he belongs to a labor organization is contrary to the employers' constitutional rights and is therefore void. The Wisconsin Court recognizes the right of the workman to combine in a labor organization, and also his right to refrain from joining such an organization. In other words, the workman is regarded as master of his own labor, and he may sell it to whom and under what conditions he pleases. The same doctrine, however, is held to apply to the employer, and the Court points out that if any employer's liberty as to whom he will hire, and under what conditions he will hire him, be curtailed by legislation, the similar fundamental liberty of the laborer can likewise be curtailed and he may be compelled to work against his will for persons, or under conditions, unsatisfactory to him. If an employer can be punished for refusing to employ union labor, the union employee can logically be punished for leaving work in obedience to his union. The right to employ, or be employed, the Court holds, is equal, and neither is subject to legislative restriction. Therefore, the law forbidding an employer to follow his own will in the choice of workmen and employ union or nonunion men at his pleasure, is set aside as violating his primary rights under the Constitution. This decision is of peculiar interest, as several States have such laws on their statute books. For example,

in the New York Penal Code there is a law which makes it a misdemeanor, punishable by not more than six months' imprisonment and \$200 fine, to compel any person to agree not to join a labor organization as a condition of securing or continuing employment. It is not unlikely that the constitutionality of this law may now be tested. Several similar laws have been set aside in New York State within the past few years, and the section of the code making it a misdemeanor to dismiss employees for membership in a labor union, or to make nonunionism a condition of employment, is not unlikely to meet a similar fate, as it appears that its constitutionality has never been passed upon by a Court of Appeals.

Municipal Ownership.

Municipal ownership of public utilities is not an untried experiment in this country. In fact, few cities or incorporated towns can be found in which some effort has not been made in this direction. Usually it takes the form of furnishing the water supply, but occasionally the municipality will also enter into the business of manufacturing gas or generating electric current for the use of the citizens. Latterly a strong sentiment has sprung up in favor of greatly extending the functions of municipal government by assuming the ownership of street railways. The apparent awakening of general interest in this subject makes it seem to be a new proposition for America, notwithstanding it is old enough to have developed some conspicuous failures, which should have a sobering effect on the enthusiasts who favor municipal ownership as a great stride in the direction of a social millennium. The strength of the arguments made by those who would have the management of gas, electric light, street railway and other public necessities vested in the city has hitherto largely been based upon the reports of low cost and high efficiency of the service secured in European cities in which this policy prevails. To such an extent has public ownership of public utilities been carried in Europe that it is termed "municipal trading" in contradistinction to enterprises conducted under private management. It must be acknowledged that the reports regarding such municipal trading have been uniformly favorable, but the success in Europe has been attributed by conservative writers to the great difference in the administration of civic affairs abroad and at home. For instance, street paving, street cleaning and garbage collecting are functions conducted by municipal governments in this country as well as abroad. Now, if municipal ownership in itself insured good results every American city should be as clean and as well paved as the average European city. It is unnecessary to ask if this is the case. It is further unnecessary to ask why it is not.

Some Results in England.

The reports now beginning to come from abroad are projecting discordant notes into the great chorus of praise of municipal trading. The most important development has occurred in London. Here an organization named the Industrial Freedom League has been formed to secure protection from the burdens which municipal ownership is imposing on the citizens. It is composed of wealthy and influential men, including noblemen, members of Parliament, manufacturers and merchants. They assert that they are being oppressed by what they term the injudicious course of the London authorities, claiming that a municipality cannot carry on the business of operating tramways and furnishing electric light and gas without extravagance because the boards or councils, drawn from all classes and ranks of society, attempt to conduct enterprises of which they have

no knowledge. It is stated that until the South African War broke out Great Britain had been steadily reducing its national debt, the twenty years from 1879 to 1898 showing a reduction of about \$650,000,000. On the other hand, during the same period, the debt of British municipalities had increased fully \$750,000,000, with a further large increase since 1898. Inasmuch as the money must come out of the same pockets, whether taxes are levied to meet the debt charges of the nation or of municipalities, the object of the league is to check the growth of local indebtedness. A definite criticism of the policy of municipal trading is presented in the case of the tramways of London. Those in the north of London, which are leased to a company, are so well managed that a rental can be paid which not only provides interest and sinking fund upon cost, but leaves a substantial surplus amounting to upward of \$200,000 per annum. The tramways in the south of London, worked by the London County Council, yield an insignificant profit. In other English towns the fares are deliberately put at so low a figure that actual loss results, so that the masses enjoy cheap transportation facilities for which the classes, the real taxpayers, must pay. It is highly probable that if all the facts were known regarding the administration of public utilities by European cities American advocates of municipal trading would not be able to paint such glowing pictures in support of that policy.

Exports of Manufactures.

The exportations of manufactures from the United States during the 11 months ending with May, 1902, was greater than that of any preceding year, except in the one item of iron and steel. The total value of exports of manufactures for the 11 months indicated amounted to \$371,647,609, against \$378,533,496 in the 11 months of 1901, or nearly \$6,885,887 less than those of last year, whereas the exports of iron and steel manufactures for the 11 months dropped over \$18,000,000 as compared with the corresponding months of last year. From this it would appear that the exports of manufactures other than iron and steel were nearly \$12,000,000 greater than for the corresponding months of the preceding year. While the exports of iron and steel have been decreased, importations of iron and steel have increased, showing a gain of \$7,000,000 for the eleven months ending with May, 1902, over the corresponding months of the preceding fiscal year. Taken as a whole, and leaving the iron and steel item out of the account, the record makes it apparent that the exportation of manufactures from the United States in the present fiscal year is greater than for the same period in any preceding year in the history of our foreign commerce.

Business Failures for Six Months.

Reports to R. G. Dun & Co. show commercial failures for the half year to have been 6165 in number, with \$60,374,856 liabilities, against 5759 insolvencies in the corresponding months of 1901, involving \$55,804,690, and 5332, with \$74,747,452 liabilities in 1900. Of this year's aggregate, 1418 were in manufacturing for \$24,940,020, 4410 in trading for \$29,145,622 and 337 in other commercial lines for \$6,289,214; as compared with 1265 in manufacturing last year for \$21,691,048, 4189 in trading for \$24,864,207 and 305 miscellaneous with liabilities of \$9,249,435. In every respect the failure statistics exhibit a striking decrease for the second quarter as compared with the first three months of the year. In manufacturing lines there were 672 defaults, against 746 in the first quarter, while liabilities were \$10,164,116, compared with \$14,775,904; and trading failures numbered 1908, against 2502, and amounted to \$13,628,295, against \$15,517,327. The improvement was most striking in financial insolvencies, however, only eight being reported in the second quarter for \$1,209,100, against 26 in the first quarter, with liabilities of \$15,588,663.

RANGE PRICES ADVANCE.

Those who have watched the conditions which have an important bearing upon the stove trade, particularly the advances in the price of iron, will not be surprised to learn of advances in the price of stoves. On Monday afternoon the manufacturers of what are known as "builders' ranges," doing business in New York and vicinity, held a meeting at which it was determined to advance the price of this line of goods 5 per cent., which action was generally agreed to. This class of goods is largely supplying the demand for coal cooking apparatus in many of the larger cities, and there should be no difficulty on the part of the comparatively few manufacturers who produce them in reaching an agreement to market this product at a satisfactory profit, as there seems to be a general feeling that in the past these goods have been sold at entirely too low a price.

The action of this small body of manufacturers in reference to one particular line of goods is evidence of the feeling that exists as to the advisability of advancing all lines of stoves, and it is not improbable that, as the busy season approaches, further advances covering all lines, will be made. There are those who feel that in view of the scarcity of iron and the difficulty of securing prompt supplies, the price of iron will be no lower, while it is very clear to them that labor and supplies will hold to the present level. Already reports indicate that some stove foundries have no supply of iron ahead, and that in some instances they have been forced to run on shorter time. If this has the effect of making stoves scarce those who have bought early and secured their stock will have an advantage over their less fortunate *confrères* in the trade. It is not difficult to find those who are already ahead of last year in the volume of business done up to date, while some houses, in view of the outlook, are considering the advisability of making less strenuous efforts to secure business.

The Thompson Oil Burner.

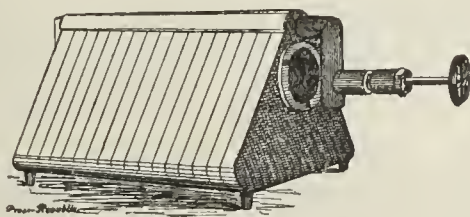
For a long time efforts have been made to produce a burner which would permit of the satisfactory employment of oil as a fuel in connection with hot air furnaces for heating dwelling houses; but, until recently, with indifferent success. The obstacles in the way have been many by reason of the peculiar properties of oil and the difficulties in connection with carbonization. It is well known that oil requires a high temperature for vaporizing, and that this temperature must be maintained until the vapor is consumed, else a smoky flame results. Inventors, however, have continued their experiments in the direction of overcoming these obstacles, stimulated no doubt in some measure by the increasing discoveries of oil fields and the advantages which would result from the use of oil as a fuel in sections of the country where other kinds of fuel are not so convenient or economical. Among those who have given the subject careful attention is R. S. Thompson of the Springfield Furnace Company, Springfield, Ohio, inventor of the Thompson tubular gas furnace made by this concern. After long research and study of the chemistry of oil, together with a careful consideration of what is required in order to successfully employ it, in a hot air furnace for heating purposes, he has produced a burner which, it is claimed, accomplishes the objects sought. We present herewith a general view of the device.

In describing the burner, Mr. Thompson states that, so far as it has been possible to establish by somewhat lengthy tests, there has been no trouble with regard to carbonization. This has been avoided by carefully studying the conditions which are required to secure carbonization at the refineries where they purposely secure it in order to obtain the lighter and more valuable oils. Having learned of the conditions under which it was secured where it was desired, Mr. Thompson so constructed his burner as to avoid these conditions. The oil is supplied to the burner by gravity, an elevation of at least 3 feet being necessary in order to obtain successful results, while an elevation of 8 feet is about the limit which will enable the burner to work to advantage. Where the elevation is greater than 8 feet there is

a tendency of the flame to blow, although this would probably be overcome by reducing the size of the supply pipe. The oil is vaporized in the generator which is at the back of the burner, and therefore not shown in the engraving.

It is a reasonable assumption that, in the course of time, there will accumulate in this generator a sufficient amount of non-volatile matter to prevent the burner from working perfectly, and provision is made for emptying the generator at any time by simply closing the valve on the oil supply pipe and opening a stop cock at the bottom of the generator, which is entirely away from the fire, and therefore not liable to become heated or troublesome. The construction is such that the generator can be emptied, it is claimed, in half a minute, and the fire started immediately. From the tests which have been made, Mr. Thompson is of the opinion that this will not need to be done more frequently than once a month, although it can be done oftener if deemed advisable.

Two methods of lighting are provided with each burner. One is with gas, where illuminating gas is available, a 1/8-inch gas pipe being connected with the bottom of the oil gas pipe and having a separate jet. The gas is turned on and the burner lighted like an ordinary gas burner. About ten minutes are required to make the burner sufficiently hot for the oil, after which the oil valve is opened and the oil gas enters through its own jet, being lighted on the face of the burner by the



The Thompson Oil Burner.

gas flame, after which the gas is shut off. This, it is claimed, makes a very neat and convenient method, as it is not necessary to watch the burner while it is being heated.

The other method is to allow a little of the oil to run through the burner into a gutter around the edge, not shown in the cut, which is filled with asbestos wool. This is lighted and when it has burned long enough to heat the burner the oil gas is turned on and the burner is immediately in operation. In either case, only one match is needed, but with the oil it is necessary to remain with the burner until it is ready to start, for, if forgotten, it will burn out, the burner become cold, and the whole operation will have to be done over again. Where preferred, wood alcohol can be used instead of oil for starting the burner. This does away with the smoke from burning the oil in the gutter.

The claim is made that the flame is perfectly steady and there is no noise, except a slight hissing sound of the escaping gas, similar to the ordinary gas burner, only a trifle louder. The flame is smokeless, and is of a beautiful green where it issues from the slots in the sides of the burner, shading off to blue, violet and purple in the upper part of the flame. Mr. Thompson points out that there is no difficulty in regulating the flame, and that in the test it was turned down to a point where there was nothing left but a little flickering blue flame, running back and forth over the face of the burner. It was continued in this stage for an hour so as to ascertain whether when the fire was turned very low the generation of gas would cease. At the end of an hour the valve was opened full and the burner started at once with full power, showing that even when turned lower than it ever would be in practice there was no interference with the generation of gas. This heretofore has been one of the great difficulties with the burners, for if they were turned low they would cease to generate gas, and the oil would begin to run from the gas valve.

FURNACE RULES AND CALCULATIONS.—II.

BY JAMES A. HARDING.

Following the line of theoretical calculation to determine furnace capacity pursued in a previous article, additional elements of the furnace heating problem are evolved in calculating the sizes of warm air pipes. In making the latter calculation it is unavoidable that two of the factors employed be assumed—viz., the maximum temperature of the heated air and the maximum velocity of air through the pipes.

It will be obvious that but one calculation, based upon the extreme conditions of the contract, will be necessary; for, as the lesser is always contained within the greater, in all conditions of weather less severe than the said extreme the fire will be regulated to provide for the desired temperature in the house with a lower temperature of the heated air, and consequent less velocity of air through the pipes.

From a hygienic standpoint, I think it desirable that the temperature of the heated air should not exceed 140 degrees F. at the register, and at this temperature the net working velocity for the whole caliber of a warm air pipe, allowance being made for friction, will not exceed an average of 3 feet per second—equal to 10,800 feet per hour—which figure I will use for convenience.

For establishing a general rule, it is necessary to deal with averages in this matter, inasmuch as a positive and constant flow of warm air through pipes, induced by force of gravity and unaided by mechanical means, is menaced by an endless variety of conditions inherent in a dwelling house, any one of which is sufficient to seriously retard or entirely prevent circulation.

What these conditions are and how to provide for them constitute the elements of furnace heating which are solvable by experience only, and not susceptible of being reduced to formulæ. This latter statement does not imply that a rule for determining the size of suitable warm air pipes cannot be evolved. It simply means that after the machine is well built and entirely completed a furnace doctor may be required to set it going as intended.

In pipes leading to rooms where suitable provisions for ventilation have been made the flow of air will be generally constant. But as the majority of rooms in dwelling houses are not provided with means of ventilation, and many such rooms are isolated, their space confined by closing the doors and the rooms subject to wind pressure from exposure to high winds, it is obvious that the size of the warm air pipe becomes, in many cases, the least important detail of the provisions for heating. This digression is indulged in simply to point out the inexactness of the science of furnace heating, and that cut and dried rules, while of value to an experienced man and a safeguard from blunders, will not make experts of the inexperienced.

To return to the main subject, I will treat one of the rooms of the house referred to in my previous article. For example, the dining room: Its glass surface is 96 square feet; exposed wall surface, 184 square feet; cubic space, 2933 feet. I compute the incidental ingress of cold air to a first-story room of an ordinary dwelling to be twice its contents per hour. In the present case it will equal $2933 \times 2 = 5866$ cubic feet. The total equivalent glass surface of this room, or heat units required to warm it to 70 degrees F. in zero weather, will be

$$96 + \frac{184}{4} + \frac{5866}{55} \times 70 \text{ degrees} = 17,430. \text{ These 17,430 heat units are to be supplied to the room by means of heated air introduced at a temperature of 140 degrees F.}$$

The outdoor temperature being 0 degree F., each cubic foot of air at 140 degrees will contain $\frac{140}{55} = 2.5$ heat units; and the total volume of air at 140 degrees required per hour will be $\frac{17,430}{2.5} = 6972$ cubic feet. The velocity of air in the pipe being 10,800 feet per hour, the caliber or cross sectional area of the pipe should be

$\frac{6972}{10800}$ square foot, which equals 93 square inches, or a pipe of 11 inches in diameter.

We thus establish a rule for determining the size of a warm air pipe as follows—viz.: Multiply the total glass surface equivalent of the room by the difference in temperature (indoors and out) and divide the product by 2.5. Divide the quotient thus obtained by 10,800, and the result will be the area of the warm air pipe in square feet or fractional parts thereof.

With regard to the size of register, it is simply necessary to provide for a free area of opening a trifle in excess of the pipe area in order to make due allowance for the friction incident to the passage of air through it. The free area of a register will average two-thirds its dimensions, and if the full area of its opening is one-half larger than the area of the pipe it is sufficient.

In a future paper it will be my purpose to introduce certain corrections or additional elements to the calculations previously made with a view to rendering them sufficiently correct for practice; also to reduce them to simple formulæ.

The Graf Acetylene Gas Range.

We present herewith a general view of a range which is intended to use acetylene gas as a fuel and which is being introduced to the trade by the Union Light &



The Graf Acetylene Gas Range.

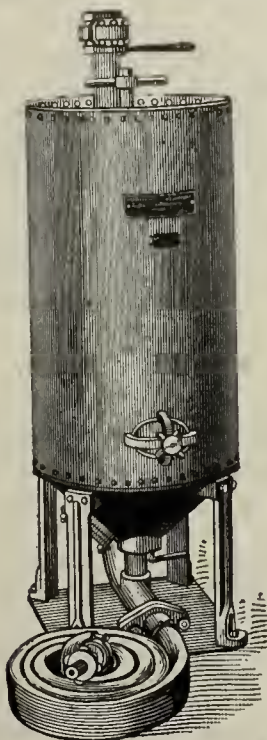
Heat Company, 106 and 108 East Second street, Cincinnati, Ohio. The range is said to be so made that there is no gauze to burn out, no odor, no flashing back, and no waste of heat. Reference is made to the perfection of combustion, ease and simplicity of operation, and safety; also to the fact that all modes of cooking can be accomplished with the range. There are no complicated parts to get out of order and no wire screens to renew. The Graf is made with two, three and four burners in the top surface and with oven measuring 16 x 19 inches in size. The top of the reservoir makes a convenient warming shelf. The company occupy a five-story building at the address named, the equipment being of the modern type, including special machinery and many labor saving devices.

THE PAXSON-WARREN SAND BLAST SYSTEM.*

BY A. G. WARREN OF PHILADELPHIA.

The sand blast process has been before the public for more than 30 years, but not until the last ten years has it come into use in the foundry. Although not yet universally used, the merits of the sand blast are fast being recognized, and quite a number of plants have been installed during the past two years. The improvements made in air compressors and the more general use of compressed air, have, in a large measure, been responsible for this. It is not until comparatively recently that there has been on the market an efficient American built sand blast machine. The machine itself should be strongly built, to stand rough usage of unskilled labor. As damp sand will clog up any sand blast, hand holes should be so located that the obstruction can be removed at once without much trouble. I have seen with the use of the double shell sand blast fully an hour required to remove some damp sand. The machine had to be disconnected and hung up by a hoist so that the sand could come out through the top.

With our improved sand blast machine all this trouble is obviated. It has a single shell, no inside hopper, all parts are accessible through hand holes and all parts liable to wear can be easily replaced. The valve at the top of the machine controls the air supply, the



The Paxson-Warren Sand Blast System.

one at the bottom regulating the supply of sand. The sand is fed in through a valved opening in the top head, which is closed when the machine is in operation. To operate, turn on the air and direct the jet of sand and air against the casting to be cleaned. The air serves to give a high velocity to the sand, which does the work. A specially designed helmet is used to protect the face of the operator. The most wear comes on the hose and nozzle. For hose we use a grade specially made for us; it is practically pure Para rubber, and will last, with constant use, from six months to one year. Length of hose may be used up to 50 feet, 12-foot lengths being long enough for most requirements. It has been found that hard iron tips and nozzles give the best satisfaction.

POINTS TO BE CONSIDERED.

An important point not to be overlooked is the quality of sand which should be used in these machines. It should be hard and tough and not too fine, and thoroughly dried and cooled before using, so that it will not steam and clog up the machine. Care should be taken not to overheat the sand, for this will cause it to break up, and a good deal of its efficiency is destroyed. To avoid trouble, it is necessary to have a good air compressor. The idea that because only a low pressure is used any old machine will do is a wrong one. As there are a number of first-class machines on the market, it is not necessary to mention any particular make. The compressor selected should have a confined suction, so that cold air can be supplied to it and thus avoid taking in more moisture than necessary. It is a well-

known fact that cold air carries less moisture in suspension than hot air. The receiver should be located near the sand blast in order to trap out any moisture that may condense in the pipe. Either a belt or steam driven compressor may be used, as best suits the power conditions of the plant where it is installed. Where there is ample engine power available it is best to use a belt driven compressor, because a large engine uses steam more economically than a small steam driven compressor. The best place to locate the air compressor is in or near the engine room, so that the engineer can take care of it. With the proper size of pipe air can be conducted a long distance with very little loss in pressure. The number of cubic feet of free air required per minute will vary according to the opening in the nozzle and the pressure required to do the work. For brass castings 10 pounds pressure is sufficient; on gray iron castings 15 to 20 pounds is generally used; and for steel castings 25 to 30 pounds is required. Experience has proved that a large amount of air at a low pressure will do more work than a small amount at a high pressure.

The sizes of openings in the nozzles commonly used are $\frac{3}{8}$, $\frac{1}{2}$, $\frac{5}{8}$, $\frac{3}{4}$ and $\frac{7}{8}$ inch. Many of the compressor catalogues give the amount of air that will be discharged through different sized orifices at certain pressures. As the sand takes up some room, it is obvious that the figures given will be ample for this service.

SPECIAL COMPRESSOR RECOMMENDED.

It quite frequently happens that an establishment having a high pressure air service already installed will consider the advisability of putting in a sand blast plant. One of the first questions arising is whether the high pressure air can be reduced. While this can be done it is not economical. Take, for example, a sand blast for cleaning gray iron castings, using air at 20 pounds pressure, through $\frac{1}{2}$ -inch nozzle, the amount of free air required would be about 120 cubic feet per minute. To compress this amount to 20 pounds requires about 9 horse-power. To compress the same quantity to 80 pounds would take about 23 horse-power. As there is no power or advantage gained by reducing, there would be a loss of about 14 horse-power, and the total loss for a year would amount to nearly the cost of a special compressor for this service.

In the preceding part of this paper the sand blast proper and the compressor for furnishing the blast have been described. As the sand blast makes a large amount of dust it is customary in most cases to have it installed in a room by itself, of sufficient size and conveniently arranged to handle the work. In all cases I would strongly advise using an exhaust fan to take away the dust. The size of fan will vary according to the size of the room; size of sand blast and amount of dust to be exhausted. It is better policy to install a large fan and run it a medium speed than to run a smaller fan at a high speed to do the same work. While the first cost may be a little more, the difference will easily be made up by the horse-power saved. Where it is objectionable to exhaust the dust out doors it becomes necessary to install a washer that sprays the dust as it is drawn through, so that the exhausted air is practically clean. The dust settles to the bottom of the washer as mud, and occasionally has to be shoveled out.

USING SAND OVER AND OVER.

Where the sand blast is used on a large scale it is an advantage to have an arrangement for preparing sand so that it can be used over and over. In this case a hopper is located in the center of the room, or to one side, and covered with a grating. The hopper discharges into an elevator boot, from which the sand is elevated and fed into a revolving screen, where the fine sand is screened out into a dust box and the tailings fall into the sand box, which is above the sand blast. From the sand box the sand is fed back into the sand blast as required. With this scheme the fine sand does not get into the washer or fan, consequently the washer does not have to be cleaned out as often. The belt elevator is a positive device, and when it is properly fed gives good satisfaction. As the conditions in any two plants are never exactly alike it requires considerable thought to get the best arrangement and one that will give the best satisfaction.

For cleaning large amounts of small castings a sand blast tumbling barrel is used to advantage. Capacities of these barrels vary from 5 to 10 tons per day. The barrel, mounted on rollers, is filled less than half full and caused to revolve very slowly, say three or four revolutions per minute. The sand blast jets are introduced through the ends of the barrel, and as the barrel revolves each casting comes in contact with the blast. The time required to clean one charge varies from 20 to 30 minutes. The advantage of this method is that the castings are thoroughly cleaned and the sharp corners preserved. The barrel itself is covered with a sheet iron casing, which is connected to an exhaust fan and washer, if necessary.

* Paper read before the Philadelphia Foundrymen's Association, June 4, 1902.

In comparing the sand blast process with other methods of cleaning it is unfair to make comparisons with methods where the castings are only half cleaned. In the bathtub business the sand blast is almost an absolute necessity on account of the labor saved, and because it is the best way to prepare tubs for enameling. On castings to be machined there is a great saving on the tools in the machine shop. The sand blasted casting takes paint better and has a more finished appearance than a casting cleaned in any other way. In most cases, where the sand blast is properly installed, it should pay for itself in two or three years. The sand blast is not confined to the foundry alone, but is extensively used for removing scale and rust from sheet iron and structural work, for cleaning brazed joints and for cutting and cleaning marble and other stones; for cleaning pieces to be galvanized it is of great service, as it does away with the possibility of the acid eating into the metal and impairing its strength.

DISCUSSION.

In the course of discussion on this paper the question as to the best place to take air from the tank was asked, and Mr. Warren thought the best effect was obtained in taking it from the top, but on account of moisture it was advisable to run an extra pipe to near the bottom of the tank, where the moisture could be held in a cup like arrangement. Some prefer to allow the air to enter the tank at a tangent, causing the flow of air to strike the sides of the tank, and the moisture then runs down the sides.

CONSOLIDATION VS. SURVIVAL OF THE FITTEST.

BY W. R. M.

If in fine residences the steam and hot water installations were designed and executed with the average intelligence which dominates the ordinary setter of the average hot air furnace, their glory would soon depart. No other system could survive the general treatment administered to the hot air furnace system by manifold joints between combustion chamber and hot air chamber; by overestimating the capacity by the dealer; by hasty and careless packing of joints by the setter and by the fervent ejaculations of disapproval by the householders, with other happenings and incidentals too numerous to mention, all of which contribute to bring the present system of furnace work into disrepute. The very fact that under these conditions the furnace survives at all marks the "survival of the fittest."

Of course there are furnaces and furnaces. Many of them are installed with the rare skill and painstaking effort only acquired by years of practical experience and the results of this experience are shown in the successive improvements made in some heaters by the progressive manufacturers. But the mass of the furnace trade may be assumed to pass through less careful, less skillful hands, and in the deal and shuffle the prestige of the "Ichabod No. 80," the salvation of the corporal of industry who sells it, and the reputation of the manufacturer are in danger.

How are we to remedy this state of anarchy and meet the condition squarely? Coming down to fixed principles it would seem that consolidation of interests would provide for the economical inauguration of systematic reform, as well as for the economical administration of affairs. The furnishing of uniform patterns at small cost to individual manufacturers would be of immense advantage. The ideal furnace should be uniform and interchangeable in its parts; and, like the telephone, for instance, it should be distributed to agents from a central point. Or, duplicate iron patterns could be awarded to those entitled to use them.

The Ideal furnace of the twentieth century should be practically a new creation, one avoiding the joints between the combustion and air chambers, and so complete in its details that the heating surface for each room may be determined separately, and allotted and operated with the same exactness, as are the radiators of direct and indirect steam and hot water installations.

It should also operate separate air circuits to and through every room. Being the logical air mover the exhaust taking the cold air from each room is, from every point of view, economical. It saves the fuel otherwise wasted in the endeavor to force air into a space already full of air. It also saves the furnace from damage by

overheating in making said fruitless endeavor. Who would undertake to heat water in a circulating boiler, using only a single pipe between water back and boiler? It is only the elasticity of air which allows the furnace to perform any duty whatever under ordinary circumstances.

The Late Edward N. Currier.

At a special meeting of the Furnace Dealers' Association of Cleveland, Ohio, and former business associates of the late Edward N. Currier of the City Stove Repair Association of Cleveland, held in that city on Saturday, June 21, the following resolutions were adopted:

Whereas, Our dear brother and business associate, Edward Currier, has been called away in a manner peculiarly sad; and

Whereas, The suddenness of his death deprived his many friends who loved him of the melancholy comfort of having been at his side to wish him godspeed upon his last journey and to help by word and presence to make his end less bitter; therefore, be it

Resolved, That the Vulcan Club, of which Edward Currier was an honored member, while realizing the futility of human demonstrations in the presence of the awful shadow, offer to the widow and orphans of the man they knew well and loved better such poor consolation as can be wrung from sorrowing hearts, and extend to them the comfort and assistance which man owes his fellow creature. Edward Currier left to his family the precious heritage of a stainless name. The Vulcan Club cannot recall him to life, but it can emphasize the fact that he was a man among men whose heart was large and whose memory will be honored while it lasts. To his family we say, this memory is priceless; when the bitterest anguish is over you will, perhaps, be consoled with the thought that the good man whose end came too soon left his mark upon the hearts and minds of all who knew him.

Signed by the committee of the Vulcan Club.

C. R. HOLMES, president.

WILLIAM H. DETTELBAUGH, treasurer.

EDWARD BOHM, secretary.

Wood Furnaces.

The recent rapid advance in the price of coal has served to turn attention to other forms of fuel for household use and to lend added interest to heating furnaces adapted for burning wood. In a catalogue which is being sent out by the Wood & Bishop Company, 329 Main street, Bangor, Maine, some very interesting information is presented as to the merits of wood furnaces for heating buildings of all kinds.

The Monitor is offered by the company in both portable form and adapted for brick work. It has a heavy all cast iron fire box, a large dome united to the top of the body in a deep cup joint and radiator connected to the dome by a draw joint fastened by upright rods. The body of the heater is corrugated and is in one piece. There is no grate, as the wood burns on the ashes with the draft on the fire line. The radiating surface is large, both sides of the radiator being directly exposed to the fire and to the cold air entering at the bottom. The company also make a hot blast furnace in portable form and for brick setting, it being offered in three sizes. The radiator is made of heavy plate steel, with heavy cast iron heads. The body of the heater and the fire box are the same as in the Monitor.

The manufacturers make the point that there are several marked advantages in a wood furnace, as any one can take care of the fire without special experience, and that a dwelling, a hall or a church can be heated completely in less time than is the case with a coal fire. They also point out that people who have had experience with wood fires maintain that the heat from them is milder, softer and more healthful than where coal is used, while at the same time the question of gas is wholly eliminated. The catalogue which the company have issued contains suggestions regarding location of furnace, sizes of pipes and registers and directions for operating their wood furnaces. A long list of names of purchasers of their goods is also given, these being arranged by cities and towns and indicating the number which each concern or individual has purchased.

THE BORN STEEL RANGE COMPANY, Cleveland, Ohio, have purchased a parcel of ground adjoining their present works, and will erect on it a one-story building, 500 x 120 feet.

ODD PLATES.

WRITING from Nottingham, England, United States Consul C. McFarland says that while the demand in the United Kingdom for American Oil and Gas Stoves and Coal Ranges is growing gradually, it could be doubled or quadrupled if our exporters would only study and conform to the peculiarities of the British market.

THE BERGSTROM SONS & Co., Neenah, Wis., have discovered a very unique and patriotic way of advertising their Royal Stoves and Ranges. They are favoring the trade with a number of blotters, artistically embossed with patriotic designs, among them being the Liberty Bell, "Old Glory" and fire crackers galore.

W. H. GRUENHAGEN, jobber and representative of various leading Stove and Range manufacturers, has just completed the erection of a new warehouse at St. Anthony Park, Minn. It is one of the largest warehouses in the Northwest devoted to the Stove trade, and enables Mr. Gruenhagen to carry a large and varied stock of Stoves and Ranges. The building is 52 x 100 feet in size, with three stories and basement, giving over 55,000 square feet of storage space. The facilities for receiving and shipping goods are exceptionally good.

"SWEEP THE CORWEBS OUT OF YOUR BRAIN" is inscribed above a little broom attached to a card which W. H. Colebrook's Sons & Co., Syracuse, N. Y., are sending out in the interest of the Crown Asbestos Furnace Cement. The house manufacture a variety of articles of interest and use to Stove and Furnace men, and desire to have their literature before the trade.

THE ELKHART STEEL RANGE & FOUNDRY COMPANY is the name of a concern recently organized at Elkhart, Ind., for the purpose of making a form of Steel Range designed by F. B. Van Camp. The incorporators of the company are F. B. Van Camp, F. M. Miller, Strafford Maxon, W. G. Forward and Howard Grey.

THE ESTATE OF P. B. BECKWITH, Dowagiac, Mich., proprietors of the Round Oak Stove Works, begin in this issue of the paper a series of drawings illustrating the life of the now famous Indian chief, Doe-Wah-Jack, after whom was named what is now a most thriving center of industry. The series of drawings will illustrate his boyhood, his home, his ancestors, his youth, his games, contests and diversions, his maturity distinction and honors as chief. The announcement is made that he is now a good Stove salesman and wears store clothes.

UZAL CORY & Co., 210 Water street, New York, are sending out a little pamphlet in the interest of the Cory Improved Excelsior Hot Air Furnaces, with the alliterative title: "Healthy, Happy Homes Have Cory's Hot Air Heaters." These heaters have been on the market for many years and have fully demonstrated their excellence. They are used for heating many of the finest residences in the vicinity of New York, and their prestige has been the means of introducing them in other sections of the country, where they are held in high esteem.

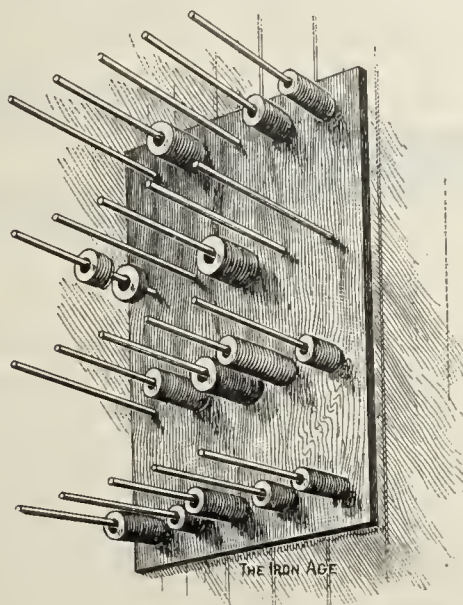
THE BRIEN HEATER COMPANY, Hoosick Falls, N. Y., who are now enjoying the possession of a new and much enlarged plant, have in course of completion a new catalogue, soon to be issued, devoted to the Brien Heaters. These Heaters are adapted for both hard and soft coal, and the new catalogue will show some substantial improvements which are designed to increase their efficiency. These Hot Air Furnaces have now been upon the market for several years, and have brought a steadily increasing demand to the company.

THE SIFTER STOVE POLISH COMPANY, Saginaw, Mich., have been organized with a capital of \$100,000 and the following officers: J. S. Smart, president; L. C. Slade, vice-president, and Eugene McSweeney, secretary and treasurer. F. A. Smart is general manager. The company will put on the market a Stove Polish made from the pure graphite, the product of the United States Graphite Company. The Stove Polish will be marketed in a new and what will be, it is thought, a very popular manner, the polish being powdered and put in a sifter top box, so that it can be applied with very little labor and annoyance.

UNDER date of July 1 the Liberty Stove Company, successors to Charles Noble & Co., announce that they have removed their offices to 114 North Second street, Philadelphia, where a display will be made of the Liberty and Iron King Stoves, Ranges and Furnaces.

A Rack for Washers.

A rack for holding Leather Washers of different varieties and sizes is shown in the accompanying illustration. It consists of a piece of varnished pine board

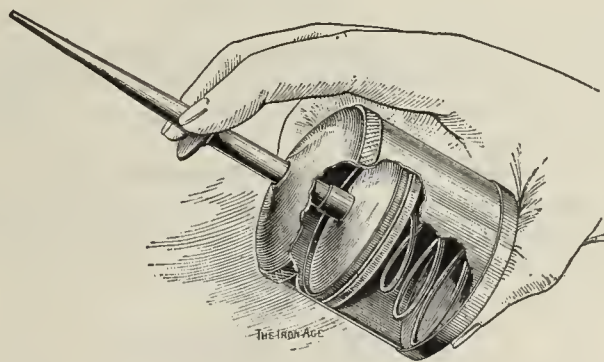


A Rack for Washers.

into which round iron rods are stuck, as shown. Over these are placed the Washers. This rack is securely fastened to the wall and serves not only as a good means of keeping this line, but also of displaying it.

The Automatic Oiler.

The Rochester Automatic Oiler & Supply Company, 206 Mill street, Rochester, N. Y., are offering the automatic oiler herewith illustrated. It is made of No. 20 gauge cold rolled Swedish steel, copperized, and holds a fraction less than 1/2 pint of oil. When filling the can the spout is depressed, as shown in the cut, forcing the air out and causing a vacuum. The end of the spout, while thus depressed, is inserted in oil and the



The Automatic Oiler.

oil is at once forced into the can, taking the place of the air ejected. It is remarked that it is impossible to overfill the can; therefore there is no waste of oil and no greasy oller. When oil is required it is obtained by pressing the spring bottom, or if a quantity is desired the spout is depressed, forcing out a stream to a distance of 4 to 6 feet, it is explained, depending on the force used. The point is made that nothing can go into the oiler except through the spout, the smallest part of the oiler; that there can be no stopping of the spout, as flies, shavings and lint cannot be taken in, and that whatever goes in must come out, as the pressure of the button forces it out.

The T. & B. Fruit Jar Holder.

The Tarbox & Bogart Mfg. Company, Cleveland, Ohio, are putting on the market the fruit jar holder shown herewith. The band which encircles the jar is a $\frac{3}{4}$ -inch crucible steel ribbon, specially rolled to exactness in gauge, and its flexibility allows it to conform to the jar. To this band is riveted a symmetrically formed forked handle, the attachments being made at points opposite the diameter of the quart, or medium sized, jar, so that, when the wrenching movement occurs, instead of an impact, it is explained, there is a tangent action, not a crushing action. The locking device is comprised

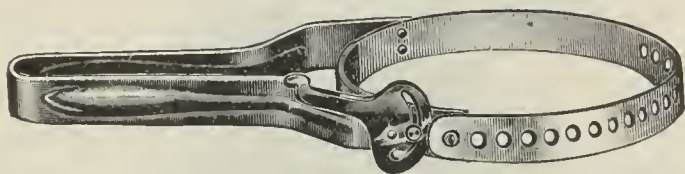


Fig. 1.—The T. & B. Fruit Jar Holder.

in a draw bar which intersects with a series of perforations in the loose end of the encircling band, and is operated by acting in an eccentric latch, pivoted to the handle, sufficiently back of the point of contact with the jar to apply no direct pressure upon the jar. It is pointed out that the cam of the latch can be so timed in relation to the center of action as to give a dead center, making it self locking. To add elasticity to the flexibility of the band, and to increase the friction, a rubber cushion is inserted in an offset of the band between the forks of the handle. It is remarked that the compression upon the jar being evenly distributed, and so gently



Fig. 2.—Fruit Jar Holder in Use.

applied, makes it, theoretically, impossible to crush the shell. The holder may be applied to form a handle to circular receptacles of various sizes, such as glass bowls, tin cans, paint pots, &c., so that when the jar is hot it may be handled as a pitcher. It is stated that in opening jars there is no disturbance to mix the musty scum with the fruit, as the jar need not be tilted nor shaken. The holder is designed to retail at 15 cents.

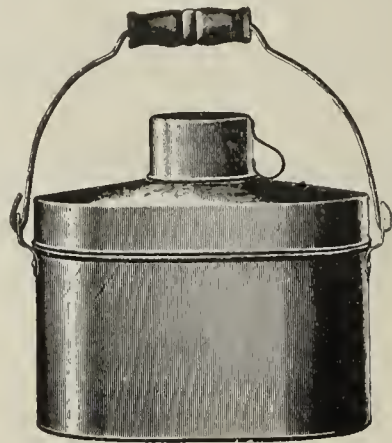
Never-Rust Compound.

George Borgfeldt & Co., 48-50 West Fourth street, New York, have put on the market a high grade rust preventive, the trade name of which is "Never-Rust." This material is really a slushing compound, the valuable characteristics of which, according to the manufacturers, are that it never gums, gets rancid or hard; contains no acid; is always odorless and easily applied. It is made in six grades, three of liquid and three of paste, varying in density through gradations of light, medium and heavy, in both forms, so as to meet many diverse requirements. In the mass it is of an orange tint, but applied to bright metal is almost transparent. It can be put on with a brush or cloth, and easily removed after it has performed its mission without any cutting agents, as is required for the removal of white lead and tallow or similar compounds, leaving the surface in its original

condition even after long exposure to the elements. A coat of Never-Rust is said to be more effective than a thick coat of grease, petroleum or tallow combination; always leaves the steel bright; dampness has no effect on it, and the sun does not remove it. The claim is made of greater economy, because of the larger surface covered effectively, the thin coating also catching and holding less dust and grit than a larger volume of material. It is put up in barrels of about 360 pounds; half barrels, 200 pounds, and cans holding variously 50, 25, 10 and 5 pounds. Samples will be mailed gratuitously for the asking, no charge being made for packing when regularly ordered in commercial quantities.

Lisk's New Oval Dinner Pail.

We present herewith illustrations showing the new oval dinner pail that is being manufactured by the Lisk Mfg. Company, Limited, Canandaigua, N. Y. This dinner pail is made of the best quality charcoal tin plate in



Lisk's New Oval Dinner Pail.—Fig. 1.—View of Pail, Closed.

three sizes—4, 5 and 6 quarts. The trays, the cover and the cup are all seamless, and consequently are not liable to leakage. The body, trays and cover are heavily wired, making them unusually strong and able to withstand hard service. The ears are firmly fastened to the body and the bail handle is strong and durable. We

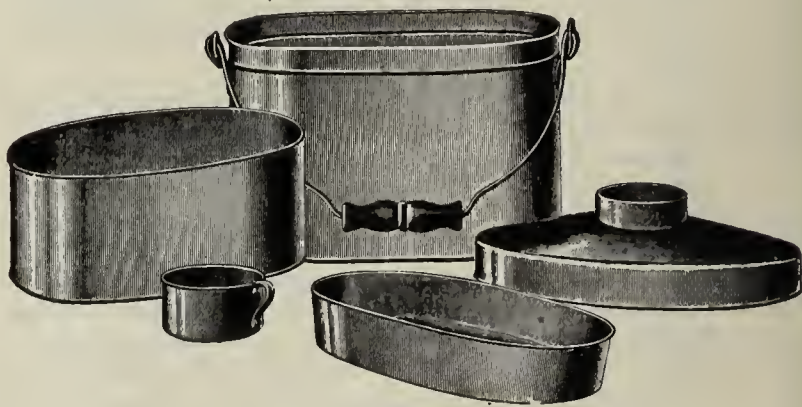


Fig. 2.—Parts of Dinner Pail.

are advised by the manufacturer that this pail is meeting with a large and steadily increasing sale. It is regarded as the most complete and up to date utensil of its kind on the market.

U. T. Hungerford Brass & Copper Company.

U. T. Hungerford Brass & Copper Company, 121 Worth street, New York, owing to encroachments by the Rapid Transit Commission, who are about to locate a subway station on a portion of the property at the above address, and the increasing demands of their business, have been compelled to seek larger quarters. They are now about to move into a fine large building about completed, known as the Hallenbeck Building, at the corner of Pearl and Park streets, 100 feet east of Centre street, a ten-story building covering a site nearly 100 feet square. The company occupy the basement, street floor and first floor above the street. There is also a new

building now under way adjoining this structure, facing Park street, of which they will have the first three corresponding floors, giving them a total of about 30,000 square feet of floor space.

In the basement of the Hallenbeck Building, which is finely lighted from natural as well as artificial sources, they will carry heavy case goods, ammunition and all reserve stock in boxes. The street floor has been systematically arranged to carry, in a comprehensive way, immense stocks of staple brass, copper and kindred goods. In one large room will be an adequate stock of rivets and burs, sheet brass and brass and copper wire in bundles, the shelving being of North Carolina pine. One large rack has been constructed to hold about 100,000 pounds of brass and copper rods. The rack for brazed tubing has a capacity of about 50,000 pounds. The rack for seamless brass and copper tubing includes also brass, tinned and nickel plated tubing in iron pipe sizes, with another rack to carry 50,000 pounds of seamless copper tubing for coppersmith use, with overhead facilities for carrying copper tubing for the same class of trade, in lengths of 20 feet, which are extra long.

The upper of the three floors is being fitted up for office and counting room purposes. Here also will be located their sample and show rooms. They have ample elevator service, both passenger and freight, and the various modern conveniences now only possessed by up to date business structures.

Their largely increased facilities, close proximity to the business centers and shipping accommodations make possible the carrying of even greater stocks than heretofore and the prompt shipping of orders.

The Herrick O. K. Wire Hoops.

The wire hoops shown in the accompanying cuts are offered by the F. A. Herrick Company, Jackson, Mich. They are designed for use on tubs, pails and barrels.



The Herrick O. K. Wire Hoops.

The hoops are made of galvanized wire with a galvanized clip, so as not to rust, and are referred to as outlasting two or three common iron hoops. The wire hoops are sent from the factory with one end of the wire in the clip, as shown, and a hammer is the only tool required to put them on. They are packed in neat boxes ready to retail from, in lengths suitable for pails, tubs and barrels, one size in a box.

Stove and Hardware Dealers.

THE eighth annual picnic of the Chicago Retail Hardware Association is announced by Fred. Ruhling, secretary of the Picnic Committee, and will be held on Wednesday, July 16, at Palos Park. There will be a number of contests for prizes and it is proposed to have all dealers connected with the association close their stores on the eventful day. Palos Park is a delightful spot of rolling country, covered with a rich growth of grass. Swings, bowling alleys and other accessories will contribute to the enjoyment of those in attendance. All jobbers donating prizes for the different contests are to be favored with an advertisement in the programme.

GEO. W. ARTHUR, in the Hardware, Mill Supply, Farming Implement and Buggy and Wagon business in

St. Matthews, S. C., desires catalogues, price-lists, &c., relating to Light Hardware, Sporting Goods, Plumbing Supplies and House Furnishing Goods.

THE AMERICAN WASHBOARD COMPANY, Cleveland, Ohio, are putting on the market No. 177 White Swan Enamel, also No. 178 Blue Jay Enamel Washboards. It is stated that the No. 177 is the only White Enamel Washboard on the market. The Glass Washboards which the company manufacture are referred to as having a large sale, while the Enamel Boards also are in good demand.

D. H. BURRELL & Co., Little Falls, N. Y., beginning February 1, 1903, will offer to the trade an improved Cream Separator, based on an important invention of which they obtained control some years ago, but which they were unable to put on the market on account of some other patents which stood in the way, but are about to expire. This Cream Separator, which will be known as the Simplex Link Blade Separator, is referred to as a distinctive advance in this line of industry.

THE ALUMINUM COOKING UTENSIL COMPANY, Pittsburgh, Pa., advise us that their Ideal Percolating Coffee Pot, which was illustrated in a recent issue of this paper, is proving very popular. For the past two months the company have been unable to fill one-half the orders that have been coming to them for this utensil.

THE SIMMONS HARDWARE COMPANY, St. Louis, Mo., have completed arrangements for the opening of a warehouse and supply depot at Ogden, Utah, where they have purchased property for this purpose.

Prof. J. B. Johnson.

Prof. John B. Johnson, dean of the College of Engineering of the University of Wisconsin, at Madison, Wis., was accidentally killed on June 24, by being thrown from his carriage at his summer home, at Pier Cove, Mich. He was born in Marlboro, Ohio, in 1851, and was graduated from the University of Michigan in 1878. Three years later he was called to the chair of civil engineering in Washington University, St. Louis, Mo. After a service of 18 years in that position he was appointed dean of the engineering department of the University of Wisconsin, which office he filled at the time of his death. Professor Johnson originated the Summer School for Artisans in connection with the University of Wisconsin, reference to which has been made in these columns. He was remarkably successful in building up the engineering department of the university named, and was instrumental in securing the erection of a \$100,000 engineering building, equipped with apparatus costing \$40,000. Professor Johnson was considered one of the foremost authorities on engineering in the United States, and was the author of a number of standard books, many of which are in use as text books.

Substitute for Linseed Oil.

The discovery of such immense deposits of oil in the Beaumont district of Texas has stimulated the use of oil in some new fields. It has proved its efficiency as a substitute for coal and other fuels; it has also been used for the sprinkling of streets, country roads and railroads, and its susceptibility to refinement into excellent illuminating and lubricating oil is manifested by the success of experiments at the Guffey refinery at Beaumont. Moreover, it has been proved that an excellent substitute for rubber can be manufactured from the residuum. According to the New York *Commercial* a company have now been organized, with a capital of \$100,000, for the manufacture of a colorless substitute for linseed oil. It is claimed that experiments conducted for several months at Dallas, Texas, have demonstrated that this oil can be purchased at such a low cost as will cause it to be largely substituted for linseed oil as a mixing agent for paints and in many other of the commercial uses of linseed oil. The claim is made that the oil is perfectly clear and that it possesses all the qualities of pure linseed. A factory for the manufacture of the substitute will, it is said, be built at Beaumont.

Patterns for Elbow Mitering Against Soffit of Winding Chute.

We have an inquiry from a correspondent in Parkersburg, W. Va., asking for a method of developing the patterns for an elbow mitering against the soffit of a winding chute. Our correspondent's drawings show a plan and elevations representing each of the four sides of the article in question, a portion of which are reproduced in Fig. 1 of the accompanying diagrams, while Fig. 2 is a perspective view of the article in question. The rear and one of the side elevations are omitted in Fig. 1, for the reason that they show something not given in the other views.

The elevations being projected from the plan necessarily have their tops turned toward the same, but as the side view is in this case the one most useful in obtaining the patterns, we have so turned the drawings on the page that this view occupies an erect position. As

the points thus obtained in the front elevation will then exactly correspond with A B of the side elevation. The line thus obtained from A B would be very much different from the line $A^2 B^2$ already drawn in the front elevation, as will presently be shown. While only one view, when finally corrected, is necessary in obtaining the pattern, the above operation will greatly assist in completing the design, from the fact that neither elevation will in the present case present such outlines as will be apparent to the eye in the finished article. For instance, if any point, as a , be assumed upon the inner curve of the plan somewhere near the 18 x 18 inch opening and lines be projected therefrom into both the elevations, as shown dotted in Fig. 1, it will be discovered that the intersection with A B of the side elevation at a' is much nearer the top line or point b than is the intersection a'' of the front elevation as drawn, the difference being there shown by $a' a''$. This is because the sides of that portion of the chute near the 18-inch opening are very oblique to the plane of the side view, and therefore do not present the outlines of the soffit as they really are;

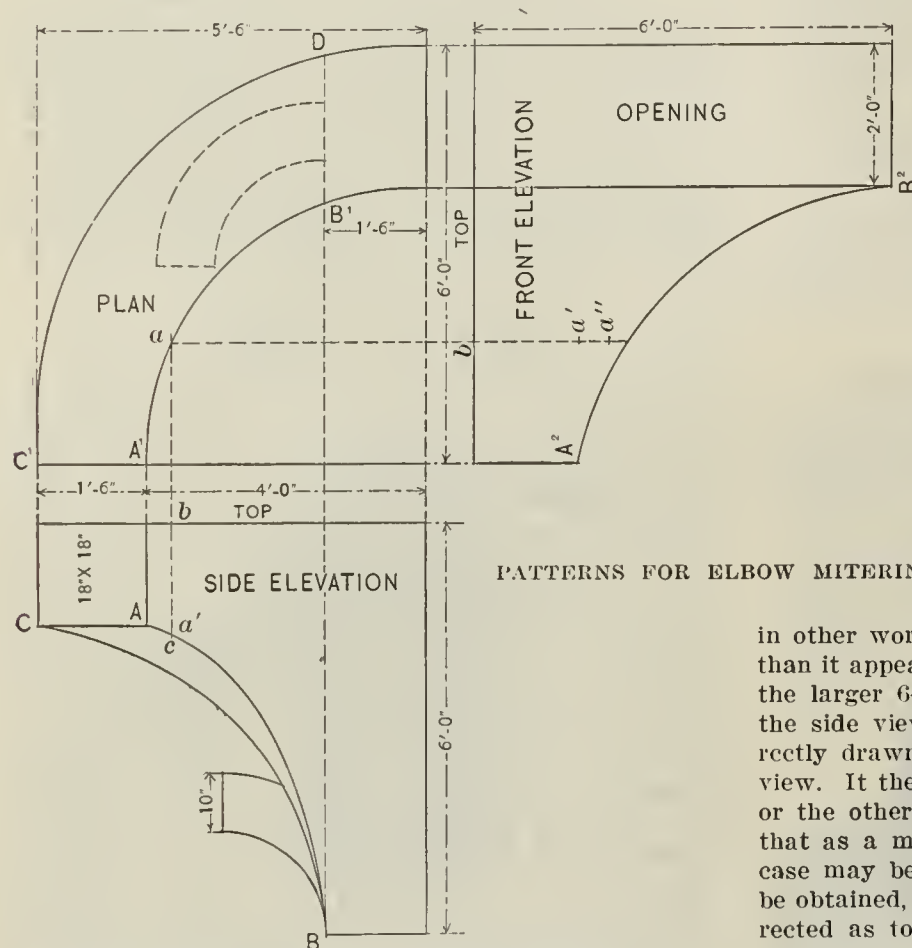


Fig. 1.—Reproduction of Our Correspondent's Drawing.

our correspondent notes that the miter lines of the elevations (meaning, no doubt, the lines defining the lower curved surface or soffit) are not correctly projected, we presume that his difficulty, as in the case of many others, is primarily that of making a correct drawing of the subject. This is also apparent from the manner in which he shows in dotted lines upon the plan the position of an elbow which is to miter into the soffit, and which he notes in a few words written on his drawing is to occupy the position shown in the side elevation.

As the operation of projecting correctly the several elevations from the plan and one given elevation is of prime importance in the solution of many problems, we give briefly the method by which the several elevations may be made to correspond in every particular. If the curve A B of the side elevation in Fig. 1 be accepted as correct, it must first be divided into convenient spaces and lines from the several points of divisions dropped vertically upon the corresponding line $A^1 B^1$ of the plan. If a front elevation is desired, lines must now be carried from the several points on $A^1 B^1$ toward the front of the plan indefinitely—that is, at right angles to the first set of lines drawn—upon which the heights of the several points on A B must be set off from any horizontal line, as the line of the top. A line traced through

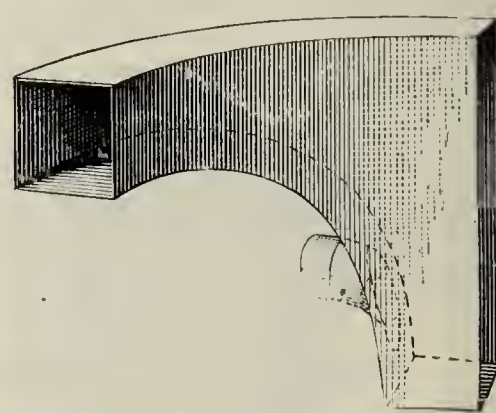


Fig. 2.—Perspective View of Article Shown in Fig. 1.

PATTERNS FOR ELBOW MITERING AGAINST SOFFIT OF WINDING CHUTE.

in other words, the point a' is much further back of A than it appears, while those portions of the curve nearer the larger 6-foot opening are more correctly shown in the side view, and for the same reason would, if correctly drawn, be correspondingly distorted in the front view. It then becomes apparent that the outline in one or the other, or perhaps in both views, is wrong, and that as a matter either of design or of utility, as the case may be, the view from which the patterns are to be obtained, in this case the side view, should be so corrected as to produce the desired result. That is, if a line drawn through points A^2 and a' of the front elevation (not shown) be considered as having the proper pitch or slant, then the line from A to B, passing through a' of side elevation, may be assumed as correct; but if such pitch, when shown in the front view, be not deemed sufficient, then a point somewhere below a' of the elevations, as c or a'' , must be assumed and the curve A B so drawn as to pass through it.

To assist the reader in forming a correct idea of the figure under consideration we show in Fig. 2 a perspective view of the same as it would appear if made approximately from the plan and side elevation shown in Fig. 1, from which the inclination of the soffit at all parts of its course may be seen.

Before the operations of pattern development can be begun one other matter must be determined—viz., the exact nature of the soffit or curved surface forming the bottom (and in its lower part the back) of the chute. This surface, as shown in plan by $A^1 B^1 D C^1$ and in the side elevation by A B C, is similar to the soffit of an arch in a circular wall. In Problems 214 to 217, inclusive, of the "New Metal Worker Pattern Book" surfaces of this character are treated, from which the reader may derive much benefit by comparison of methods. In the treatment of this surface, in view of subsequent operations, the pattern cutter, as in many other instances, is called upon to choose between the method which adheres strictly to the drawings as given

him, and thereby leads him into intricate complications, and a course which is very much simpler and more practicable, though not following out the design to the letter. Since it is against this surface that the elbow, partially outlined in Fig. 1, is required to miter, and since the pattern for such a surface can only be developed by triangulation, it will be seen that the several triangles into which its surface is divided by the operation of obtaining its pattern are all small planes, each slanting at a different angle, and that to obtain with accuracy the intersections of the different pieces of the elbow with the several triangular planes which may lie in the path or course of each would involve much labor. There is no limit to the intersections which it is possible to obtain if necessary, so long as the surfaces or figures involved and their relative positions can be geometrically defined. Such operations would no doubt be more interesting and instructive than practicable. In view, then, of the above mentioned conditions, so far as ob-

out of the same, beginning at A^1 , is set off on $C^1 A^1$ of the plan, extended as shown by $A^1 E$. Lines from the several points on $A B$ are then carried upward to intersect with the outlines of the sides $A^1 B^1$ and $C^1 D$ of the plan, from which points of intersection lines are carried into the measuring lines of corresponding number of the stretchout in the usual manner. Then will $A^1 B^2 D^2 C^1$ be the pattern of a soffit, of which $C A B$ is the profile. That portion of the pattern corresponding to $C A$ of the profile, being horizontal, is obviously the same as $C^1 A^1 c$ of the plan itself, to which the remaining portion corresponding to $A B$ of the profile, is added, as above described. The intersections are not numbered on the sides of the plan to avoid confusion with another set of numbers on each, which will be used in obtaining the patterns of the sides.

If, however, it is desirable, as before described, to adopt the line $C B$ as drawn in Fig. 4 as the further outline of the soffit, the pattern must be obtained by

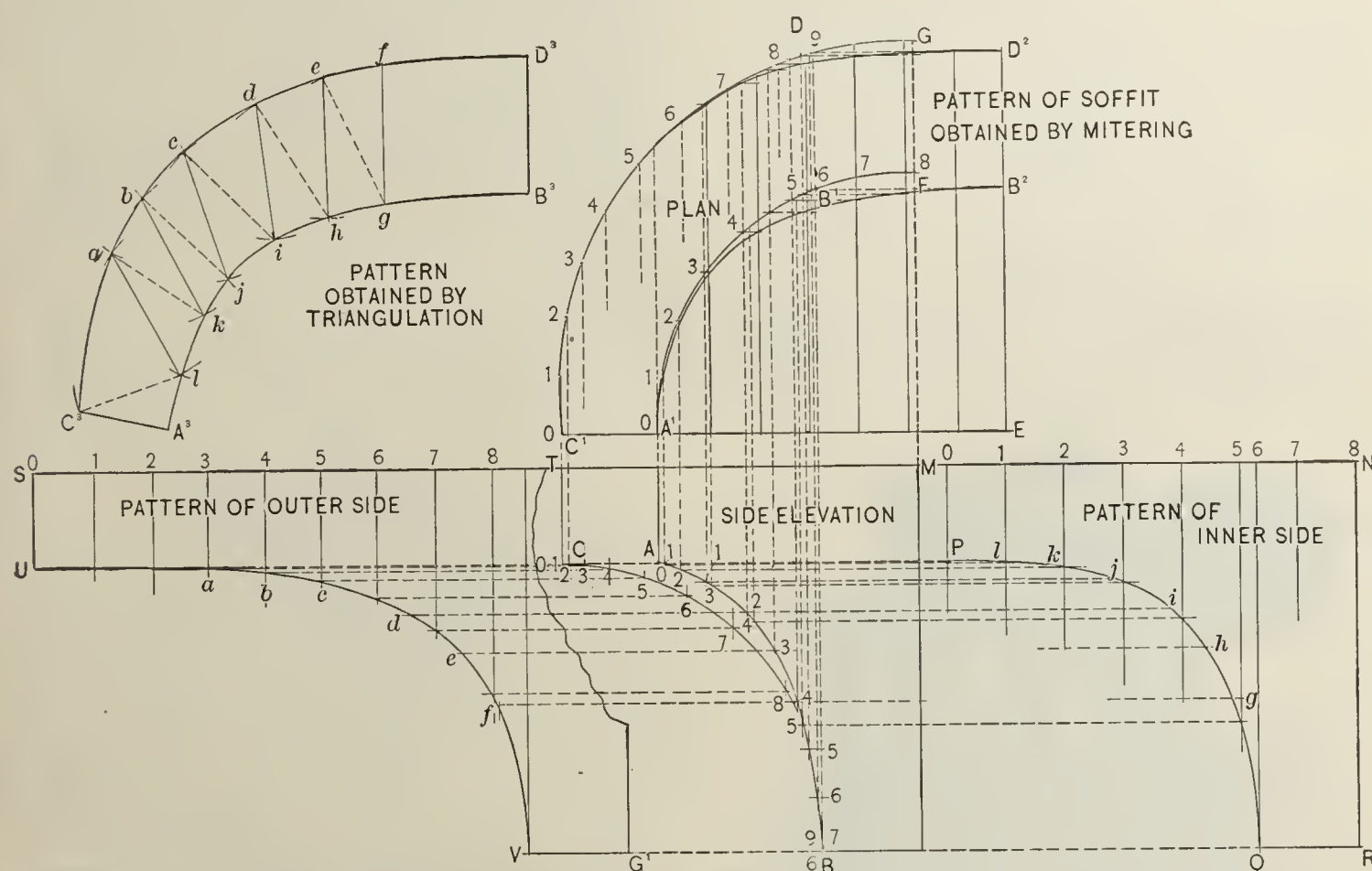


Fig. 3.—Method of Developing the Patterns for the Sides and the Soffit of Chute; Two Methods of Treating the Soffit Being Shown.

PATTERNS FOR ELBOW MITERING AGAINST SOFFIT OF WINDING CHUTE.

taining the patterns is concerned, the intersection of the elbow can be greatly simplified by considering the soffit as a portion of a somewhat cylindrical surface, whose profile is $A B$ of the side view, Fig. 1, thus doing away with the line $C B$. At all events, if a single line be used from B to a point above where the 10-inch elbow enters, the further outline may then be allowed to deviate to the point C , as shown in Fig. 4, if it is desirable to adhere to the original character of the design as given in the side view of Fig. 1. This arrangement reduces the intersection of the elbow with the curved soffit, shown in detail in Fig. 5, to a problem in miter cutting so simple as to scarcely require demonstration; and if, as above mentioned, the single line $A B$ be adopted as the profile of the soffit, the same may be said of the remainder of the work.

The method of obtaining the pattern of the soffit upon this supposition is shown upon the plan of Fig. 3. Since that portion of the pattern corresponding to $C A$ of the profile, which is horizontal, must be the same as shown in the plan, the remaining portion of the profile $A B$ is divided into any convenient number of equal spaces, as shown by the figures 1 to 7 at the right, and a stretch-

triangulation. As its sides must correspond in length, respectively, with the lower edges of the two side pieces of the chute, it will be most convenient to develop the patterns for the side pieces first.

Therefore divide $A^1 F$ of Fig. 3, the plan of the inner side, into any convenient number of equal spaces, as shown by the small figures 1 to 8, and set off a stretchout of the same on the top line of the elevation, extended as shown by $M N$, and draw the usual measuring lines. From the several points on $A^1 F$ drop lines, cutting the line $A B$ of the side, as shown by the small figures on the left of $A B$, and from the several points of intersection carry lines horizontally, cutting measuring lines of corresponding numbers, and trace a line through the several intersections, as shown by $P Q R$. Then will $P Q R N M$ be the pattern for the inner side. It will be noted that a line from point B of the side must be projected onto the plan, where it is designated as 6. It must then be correspondingly located on $M N$, so as to determine the position of point Q of the pattern. The pattern for the outer side is obtained in exactly the same manner by dividing its profile or plan $C^1 G$ into spaces, which are set off on the line $S T$ for a stretchout. Lines

from the points on $C' G$ are then dropped into the line $C B$ of the side view and are then carried thence into the measuring lines, all as shown at the left in Fig. 3. The line $C A B$ may be used instead of $C B$ if the mitered pattern above obtained is to be used. The reader is referred to Problem 48 of the "New Metal Worker Pattern Book," in which a subject of similar nature is treated.

The triangulation of the soffit piece is shown in Fig. 4, but the pattern as obtained therefrom is shown in the upper part of Fig. 2 at the left. Since from the nature of the design there is no view in which the full length of its sides can be given, any method of dividing them into spaces may be adopted which is most convenient. The line $A B$ of Fig. 4 is therefore first divided by the points j, i, h and g into equal spaces down to the point g , which corresponds with the point 4 of the first division

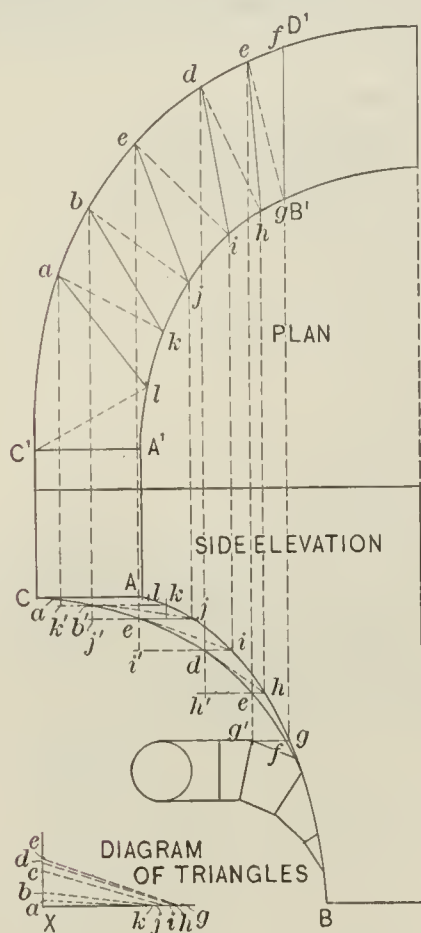


Fig. 4.—Method of Triangulating the Soffit of Chute Preparatory to Obtaining Pattern.

drawn through the shorter diagonal of each, as $e g, d h$, &c. In determining the true lengths of the sides of the several triangles into which the plan of the soffit has thus been divided it will be seen that the lengths of the solid lines and of the dotted line $C' l$ may be taken directly from the plan as given, because they represent the horizontal lines of the side view, but that the true length of the dotted lines must be obtained by constructing a diagram of triangles, as shown below in Fig. 4. Therefore from each of the various points g, h, i , &c., on the line $A B$ draw a horizontal line to a point directly below the next higher point on the line $C B$, from which drop a perpendicular. Then will the several perpendiculars $g' e, h' d$, &c., be the altitudes of the right angled triangles of the diagram, of which the dotted lines will be the bases.

In constructing the diagram of triangles the several heights $X a, X b, X c$, &c., are made equal to $k' a, j' b, i c$, &c., of the side elevation, while the bases $X k, X j, X i$ are made equal to the dotted lines $a k, b j, c i$, &c., of the plan. The several hypotenuses $a k, b j, c i$, &c., of the diagram will then be the true lengths of the dotted lines of corresponding letters in the plan.

In order to find the true lengths of the spaces $a b, b c$, &c., of the outer side and $l k, k i$, &c., of the inner side it will be necessary to find points exactly corresponding to them on the outlines, or miters, $U V$ and $P Q$ of the patterns of the side pieces previously ob-



Fig. 5.—Patterns for the Several Pieces of the Elbow Mitering Against Soffit of Chute.

PATTERNS FOR ELBOW MITERING AGAINST SOFFIT OF WINDING CHUTE.

of $A B$, Fig. 3, used in obtaining the first or mitered pattern of soffit, and which also represents the point of deviation between the line of the inner side $B A$ of the soffit and that of the outer side $B C$. On account of the coincidence of the two lines from B up to this point it is evident that the two patterns must be alike for the same distance, therefore in beginning the triangulated pattern first transfer a duplicate of that portion of the mitered pattern from the measuring line 4 of the stretch-out $A' E$ of Fig. 3 to the end $B' D'$ to any convenient position, as shown by $f g B' D'$ at the left.

Now erect lines from points in $A B$ of Fig. 4 to cut line $A' B'$ of plan, after which it will appear that a very long space occurs from A' to point j of the plan. This space may be further divided by points k and l , and lines from these points of division carried back to the side view and correspondingly lettered, as shown. From the several points g to l of the side view carry lines horizontally across, cutting the outer line $C B$ at points a to f , and from these points erect lines, cutting the outer line of the plan $C' D'$, as shown by corresponding letters. Connect points on the inner with those on the outer line of the plan with solid lines corresponding with those just drawn across the side view, as $f g, e h$, &c., and divide the spaces so obtained by means of dotted lines

tained in Fig. 3. Therefore from the points 1, 2, 3 and 4 as numbered on the right of $A B$ of Fig. 3, which correspond exactly with points j, i, h and g of $A B$, Fig. 4, project lines in either direction, cutting the lines $U V$ and $P Q$ of the patterns, as shown, and lettered to correspond respectively with the points on $C B$ and $A B$ of Fig. 4. Then will the spaces $g h, h i$, &c., and $f e, e d$, &c., be the correct lengths of the spaces bearing corresponding letters of the plan, Fig. 4. To complete the pattern as shown in Fig. 3, of which the portion $g f D' B'$ has already been obtained as described above, take first the distance $e f$ of the pattern of side just below and from f of pattern as center describe a small arc near e , which intersect with another arc whose center is g of the pattern and whose radius is $g e$ of the diagram of triangles in Fig. 4, thus locating the point e . In the same manner, with radii respectively equal to the spaces $g n$ of the pattern of the inner side and $e n$ of the plan in Fig. 4, describe arcs intersecting at h . So continue, using the spaces upon the pattern of the outer side piece for distances on the outer side of the pattern and those from the pattern of inside piece for distances on inner side of pattern; also lengths from plan in Fig. 4 for distances on the solid lines across the pattern and lengths from the hypotenuses of the diagram of tri-

angles for distances on the dotted lines of the pattern, all as shown. Lines traced through the intersections of arcs, as shown by $A^3 g$ and $C^3 f$, will complete the pattern. That portion of the curve from C^3 to a of the pattern may be transferred from the corresponding arc of the plan, since the surface of the soffit at that part is practically horizontal and therefore correctly shown in the plan.

The intersection of the elbow with the cylindrical surface at $B g$ of Fig. 4 is shown somewhat enlarged in Fig. 5. The elbow, as if completed, is there drawn in five pieces, but any number of pieces desired can be used. As will be seen, piece 1 is entirely eliminated by the intersection, while pieces 2, 3 and 4 miter against the surface of the soffit. The operation of developing the pattern of piece 3 is first shown as though it were an entire piece. The intersections of the miter line $A B$ with pieces 2 and 4 have been transferred to corresponding points on piece 3, as shown at $a b$ and $c d$, so that the operation of developing the patterns for the three pieces is performed at once, a half pattern of all the pieces being shown, from which the full pattern for each piece may be traced, making the joint either at the throat or at the back, as described. The stretchout is obtained from a profile of the elbow placed in line with piece 3 of the elevation, and the subsequent operations are so fully shown in Fig. 5 as to require no further demonstration.

The length of the opening in $A B$ to receive the elbow is equal to $e f$ and its stretchout may be taken from the points of intersection on $A B$ for piece 3, to which is added above that of $a b$ for piece 4 and below that of $c d$ for piece 2. The width of the opening at the several points is equal to that of the profile on lines of corresponding number.

THE ORIGIN OF "PI."

BY I. N. PHILLIPS, NASHVILLE, TENN.

One of the first questions encountered by the sheet metal worker who is trying to improve himself in the higher branches of his trade is how to calculate the circumference of a circle from its diameter. In these latter days there is no trouble in procuring a printed table of circumferences and areas of circles, and I think that it is well to keep one of these tables at hand to save time and to reduce the chances of mistakes, for the best of us are liable to slip a cog in the hurry of business. At the same time it is well to understand the principles underlying the calculations on which such tables are based.

The first rule that the workman generally learns is to "multiply the diameter by three, and add one-seventh of the diameter to the product." While this rule is not absolutely correct, it is accepted by many as near enough for all practical purposes. As he proceeds in his search, the workman finds this rule: "Multiply the diameter by 3.1416, and the product is the circumference," and he will generally accept it with the beautiful faith of a new convert, because he saw it in a book, and it looks and sounds scientific. But if he should be asked why he multiplies by 3.1416 rather than 3.1614, he will probably be stumped. The decimal 3.1416 is the ratio of the circumference to the diameter, and is denominated by the books and mathematicians by the Greek letter "Pi." It was not stumbled upon in the dark, nor obtained by any cut and dried method. It has been known since the days of Euclid, and probably longer, and was given the name of "Pi" by a Swiss mathematician named Leonhard Euler, who lived from 1707 to 1783. So it is quite ancient. It is nearly the same ratio as 7 to 22, a closer approximation being 113 to 355. It is easily deduced by any diameter multiplied by any circumference, and the product divided by its diameter will give the circumference of the first diameter. Hence, if the circumference of 7 is 22, any diameter multiplied by 22 and the product divided by 7 will give the circumference of such diameter.

In looking up the origin of "Pi," it will be found by the following method: Geometry treats a circle as a polygon with an infinite number of sides, and if the student will take a polygon of six sides, called a hexagon, and from any standard work familiarize himself with

the method of calculating the perimeter of the six sides, and then divide it into one of 12, 24, 48 sides, &c., he will find in the eighth and ninth operation that the results begin to differ at the sixth place of decimals—that is, 3.141591 and 3.141592. Now as four places of decimals is by common consent generally considered close enough, the decimal 3.1416 is used.

If the student has followed up the operation as indicated, he has had some healthy practice and probably has some respect for "Pi." If he chooses, however, he can carry on the calculation, *ad libitum*, with the assurance that he will not find the exact ratio. He will only approach a little nearer the unattainable, and, after he has figured until he is tired, if he is of a reflective turn of mind it will begin to dawn on him that the man who is trying to square a circle by mathematics is barking on a cold trail, because he is like the fellow who tried to move the world with a lever—he had no place to rest his lever.

From the foregoing it will be seen that "Pi" 3.1416 (the circumference of one) is only a very close approximation; near enough, but not exact. Now, why there is not an absolutely correct ratio between the diameter and the circumference is another story. At any rate, the above may be of some help to the mechanic who has begun to inquire into the reasons for things.

A Gang Slitting Machine with Flattening Rolls and Winder.

To meet the demand for a gang slitting machine so arranged that the slitted metal shall leave the machine with each strip coiled separately and without any burr



Gang Slitting Machine with Flattening Rolls and Winder.

on the edges, Blake & Johnson of Waterbury, Conn., have designed the machine here illustrated. It is provided with a pair of hardened steel rolls, placed directly behind the cutting arbors, for rolling down the burrs. Behind the rolls is a winder shaft, which may be driven by an intermediate shaft and bevel gears, or by a belt from the main cutter arbor. The arbors are of hammered steel 2 inches in diameter, and in their ends are inserted hardened steel thrust bearings which run against the ends of hardened steel screws. The frame supporting the outer ends of the arbors is adjustable on the bed, and by loosening the clamp screws can be moved on the bed to allow the cutter to be removed or changed without disturbing the arbors. The cutters are $4\frac{1}{2}$ inches in diameter. The machine will take a sheet 7 inches wide and of any thickness up to No. 17 Stubs gauge.

The offices of the United States Fire Proofing Company have been removed to the Keystone Building, Fourth avenue, Pittsburgh, Pa.

THE TIN PLATE WAGE SCALE.

The Conference Committee of the Amalgamated Association of Iron, Steel and Tin Workers met in New York City on Tuesday and Wednesday of this week with Vice-President Warner Leeds and the district managers of the American Tin Plate Company for the purpose of considering the seven new foot notes proposed by the association. President Shaffer and the other members of the Amalgamated Conference Committee returned to Pittsburgh on Wednesday evening. Before leaving Mr. Shaffer said:

We settled nearly all the foot notes, as the general conditions are called. The rest have been referred to the local lodges. Our conferences have been friendly and satisfactory, and there has been no friction. The foot notes, most of which have been settled, do not affect the general situation. There is not, will not be and cannot be any trouble until the wage scale expires on July 1, 1903.

Metal Shingles and Tiles.

The Montross Metal Shingle Company, Camden, N. J., report a marked increase in every department of their business. They have experienced an especially active demand for their Victor, Gothic and Diamond metal tiles, and their Eastlake and Octagon metal shingles. These goods are made in both tin and galvanized iron, and are thoroughly painted on both sides with the best oil paint. The Victor shingle is designed for buildings where a special ornamental roof is desired at a moderate cost, while the Eastlake shingles are adapted for all classes of buildings, and cost about the same as the ordinary wood shingle, or slate, or tin roofing. The company are also placing on the market the Eastlake roofing paint, made in four colors—red, brown, black and slate. This paint is especially prepared for metal shingles, tin and iron roofs, smoke stacks, and all metal surfaces that are exposed to the weather. Upon request the company will gladly send their catalogue, giving testimonials and illustrations of residences and other buildings covered with their various designs of metal shingles and tiles, Japanese hip caps, finials, &c.

The Totten Aluminum Soldering Compound.

Various alloys and compounds for soldering aluminum have been put upon the market with more or less success. The Totten compound is offered by the Whaley-Totten Company, 940 Ellicott square, Buffalo, N. Y., as a practical aluminum solder. It is claimed that this solder can be used with the same simplicity as the ordinary tinsmiths' solder, the observance of only a few things being necessary to secure success. The compound is said to contain a sufficient proportion of aluminum to prevent its discoloration, so that it does not present any difference in appearance from the metal of the articles on which it is used. It will join all the alloys of aluminum as well as pure aluminum, and will also solder aluminum to iron, copper, brass and malleable iron, as well as any of these materials together.

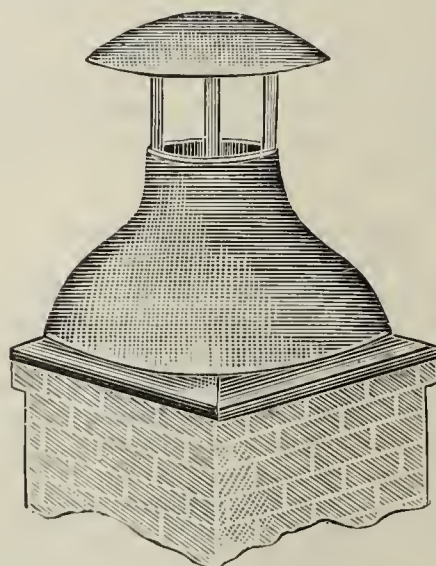
In use it is only necessary to provide a clean surface when soldering aluminum, as the compound carries sufficient flux to secure a connection with the parts to be united. It is best to provide a large soldering copper especially for this work, which, after being forged to suitable shape and filed, should be coated with the compound in the same way that the tinsmith tins his copper. The soldering copper used for the Totten compounds should not be used with ordinary tinsmiths' solder, but should be reserved for aluminum work only. Owing to the excessive heat conductivity of aluminum the soldering coppers should be heated to a greater proportionate degree and to an extent adapted to the thickness of the aluminum to be soldered. As a usual thing a cherry red heat will secure the best results, but experience will soon determine what heat will be the most effective under varying requirements. When soldering

aluminum no flux is required, nor is any scratching necessary, as it is claimed that the solder carries with it a sufficient flux to get under the oxide and make the solder adhere strongly to the surface of the aluminum. The claim is further made that an aluminum article soldered with the Totten compound will show no tarnishing or oxidization at the point of soldering, and the soldered parts will not be affected by moisture, acids or the action of boiling water.

The manufacturers state that this compound is the only one that will take thoroughly on steel or malleable iron, when a flux of muriatic acid, cut with zinc, is recommended. The flux, however, is only necessary on other metals than aluminum. The company issue a circular explaining the properties and merits of the Totten soldering compound and containing testimonials from those who have used it.

The Everlasting Chimney Cap.

Many persons desire a more substantial chimney cap than the galvanized sheet iron device generally used. The Everlasting cast iron chimney cap and base piece, manufactured by McCahan & Co., 4 North Eden street, Baltimore, Md., an illustration of which is given herewith, is claimed to supply this need in a cheap and sub-



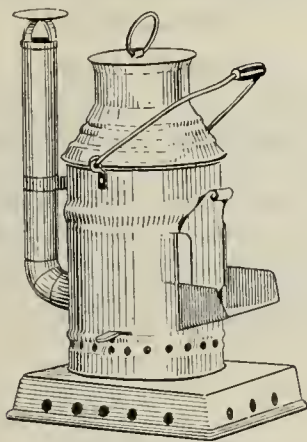
The Everlasting Chimney Cap.

stantial manner. The device can be used as the base for any kind of round chimney cap, or it is a complete cap in itself, about 15 inches high. When used as a base on which to place a sheet metal cap, it is only necessary to take off the top or cover, which can be used for the top of the extension. The manufacturers claim that after 15 years' experience in the making of chimney caps, they believe that in this device they have secured the most effective cap yet produced. Nearly all cast iron caps heretofore used have in them obstructions of various kinds, such as cross bars, ventilators, &c., but this cap is entirely clear. The three holes in the collar at which the straps of the top are fastened are utilized when an extension is added, by driving eight-penny nails into them to hold the extension. These chimney caps are made in two sizes, with plates 22 inches square and 8½ inches at the collar, and 18 inches square and 8½ inches at the collar.

A DRAWING CLASS has been formed by the sheet metal workers of Milwaukee, Wis., for the purpose of making a more careful study of difficult sheet metal pattern drawing and of assisting those interested in this branch of trade. The class is composed of Henry Johnson, Adolph Schumann, Albrayh Milbrath, Anton Drasl, Ernst Strassberger, Rudolf Ziehn, Roland Roden, George Deitz and John Kempster. We congratulate these craftsmen on their enterprise and feel that they will be more than repaid for the effort expended.

Twentieth Century Down Draft Fire Pot.

We give herewith an illustration of the Twentieth Century down draft fire pot, which has been patented and is being manufactured by P. H. Bayley of Sidney, Ohio. The body is made of No. 26 gauge Wood's refined iron, and is lined on the inside with No. 22 gauge iron. It is equipped at the bottom with a slide for the removal of the ashes, which is only required to be done every two days. Another slide in the front is designed to close the holes for irons at night, and when carrying the pot about. On the back part are two rings with a socket at the bottom of the pot which holds the solder-

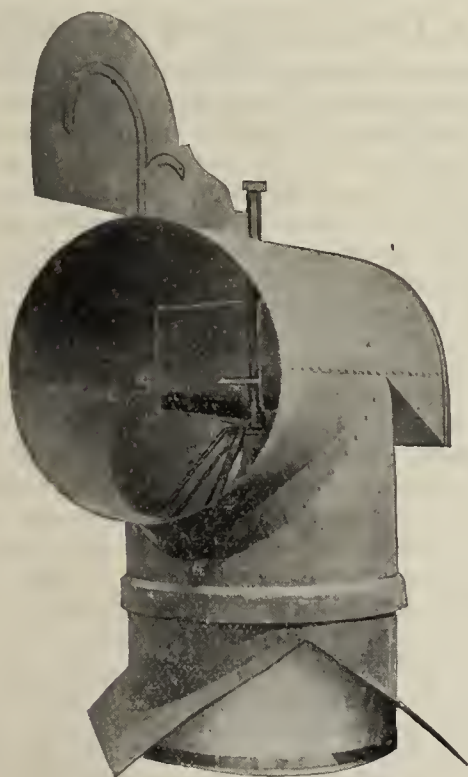


Twentieth Century Down Draft Fire Pot.

ing irons. The pot is strong and neatly finished, and is said to be especially effective with charcoal as fuel. The manufacturer claims that it provides a regular heat, while the fire is under control at all times. It is possible to regulate the heat, through the back draft and the grate, to any degree desired. It will also hold the fire over night, thus saving the trouble of building a fire in the morning. The pot is neatly made and is strong and durable. The manufacturer claims that this pot burns less than one-half as much fuel as is consumed by the old style top draft pots.

The Syphon Ventilator.

An interesting candidate for public favor in the way of a chimney ventilator is the Syphon, which is being



The Syphon Ventilator.

manufactured and placed on the market by the Syphon Ventilator Company of Topeka, Kan. The device is the invention of a prominent architect of Kansas and is constructed upon the old and well tried principle of a siphon pump. The ventilator, shown herewith, is oper-

ated by the wind, and the claim is made that the slightest breeze is sufficient for the purpose. It is strongly made of galvanized iron, all joints being both riveted and soldered. It is also strongly stayed at various points with wrought iron bands, and is mounted on ball bearings, so that it turns easily to face the wind. Some very interesting experiments have recently been made with the ventilator in connection with those of different manufacture, with entirely satisfactory results. We understand that arrangements are now in progress looking to a public exhibition of these contests in Kansas City and Chicago in the near future. The Syphon ventilator is particularly adapted for use on public and private dwellings, cars, ships, &c., as well as for the ventilation of mines, and the makers state that the device is a positive cure for a smoky chimney.

FLASHINGS.

ALL the Tin Plate and Metal houses in New York City have arranged to close up from Thursday evening, July 3, to Monday morning, July 7, thus giving a much appreciated holiday to the employees.

THE BARLOW BROTHERS COMPANY, Waterbury, Conn., have secured the contract for a large amount of Sheet Metal work on the buildings of the American Pin Company, who are large manufacturers of Air Valves.

THE INTERNATIONAL TIN PLATE CORPORATION of New Jersey, have been assigned a patent covering a system for continuous heating and metal rolling, recently granted to the inventor, Thomas V. Allis of Bridgeport, Conn.

DENNIS McNALLY, Worcester, Mass., has the contract for putting up 16,000 square feet of Metal Ceiling in the basement of St. Paul's Church in that city.

THE FRED. J. SWAINE COMPANY, St. Louis, Mo., are exceedingly busy turning out Presses, Dies, &c., in response to orders, and are crowded to the utmost of their capacity to meet the requirements of their customers promptly. The concern are adding new tools and machinery to enable them to better meet the demand for their productions, and work is rapidly progressing upon the company's new plant, the erection of which will be pushed with all speed.

GEORGE M. COUCH, Hartford, Conn., has the contract for 4000 square feet of tin roofing for a building for W. H. Shaffer. He is also building 500 Tanks, to be used on motor cycles for the American Bicycle Company.

A COMPANY have been organized at Jonesboro, Ind., with a capital stock of \$300,000, by J. M. Beavo, James L. Elston, N. J. Cappock and others, for the manufacture of Tin Plate. It is reported that an eight-mill plant will be erected. The plans are now in hand, and it is expected that bids for the construction and equipment of the plant will be called for within a short time.

THE BANFIELD plant of the American Tin Plate Company, at Irondale, Ohio, consisting of four mills, is being dismantled.

It is reported that George D. Evans, formerly manager of the Carnahan Tin Plate Company's plant at Canton, Ohio, is organizing a company to erect a large Sheet mill.

C. M. NALLS, Roanoke, Va., is contemplating the erection of a Tin Can factory in that city.

THE ENAMEL STEEL TILE COMPANY, Bellaire, Ohio, have incorporated with a paid in capital stock of \$50,000 for the manufacture of Enamel Steel Tile for wainscoting, fire fronts, hearths, ceilings, &c. The advantages claimed by the company are that the Tile are vermin proof, durable and easy to put up. It will be made in a great variety of colors.

TUBE MILL No. 1 of the Youngstown Iron, Sheet & Tube Company, at Youngstown, Ohio, was placed in operation and is producing Wrought Iron Pipe made from the company's Double Refined Puddled Iron. The company now have in operation their blast furnace, Sheet Bar mill, puddle department, a Sheet department for the production of their exclusive New Process Galvanized and Double Refined Puddled Iron Sheets, and the first of the three Tube mills. The remaining two

mills will be on in about 30 days. Work on the plant is progressing rapidly.

DISPATCHES from Waukesha, Wis., announce that the Waukesha Sheet Steel Company contemplate the building of an Open Hearth Steel plant, as well as the adding of a corrugating department. The difficulty of obtaining Steel recently is said to have induced the company to enter into the manufacture of Steel. The scarcity of Steel heretofore has compelled the works to suspend at various times. It is understood, however, that some of the mills have now resumed.

THERE will be no more open mills for the members of the Amalgamated Association of Iron, Steel and Tin Workers. July 1 was set by the Wheeling convention as the date on which lodges must have been reorganized in all open mills, or all members of the association must withdraw. The order may cause some vacancies in plants now open.

F. R. PHILLIPS & SONS COMPANY, Philadelphia, Pa., have commenced shipments on their contracts for Tin Mills and Machinery to the Huntington Tin & Planished Plate Company of Huntington, W. Va., and the Juniata Steel & Iron Company, Greencastle, Ind. They have a contract with the latter company for the entire equipment of Hot Mills, Tandem Cold Rolling Mills, Doubling Shears, Squaring Shears, Bar Shears, Lathes, &c.

THE WASHINGTON CHARCOAL IRON TIN MILLS, Washington, Pa., have declared the regular quarterly dividend of 3 per cent., payable July 1.

THE recently organized Indianapolis Tin Company, Indianapolis, Ind., now have their Tin Can plant in running order. They have purchased adjacent property on which they propose building an extension to the present plant, to be used for the manufacture of Lard and Paint Cans. This line, however, will not be taken up until the other lines are fully established.

THE production of Tin in the Federated Malay States was in 1900 and 1901, respectively: Perak, 355,589 and 385,066 piculs; Selangor, 269,490 and 302,598 piculs; Negri-Sembilan, 72,251 and 75,242 piculs, and Pahang, 12,728 and 22,084 piculs.

THE FERGUSON TIN PLATE COMPANY of Pittsburgh have made application for a charter. The new concern will take over the business of the Ferguson Tin Plate Company, Limited, operating a dipping plant at East Liberty, Pittsburgh, with a capacity of 500 boxes 20 x 28 inch Terne Plates per week.

GEORGE W. HEARTLEY of Toledo, Ohio, manufacturer of Eaves Trough Hangers, Power and Hand Punching Machinery, Tools and Dies, has purchased a factory building 33 x 99 feet, four floors, and will also erect, adjoining same, a factory 66 x 99 feet and two stories high. It is his intention to manufacture special machinery for the production of Metal Wheels of every description; also Punches, Dies and Die Forgings. His facilities for producing Eaves Trough Hangers will also be greatly increased.

THE SHENANGO AND NEW CASTLE WORKS of the American Tin Plate Company, at New Castle, Pa., have been closed down for about one week, to make necessary repairs and take inventory.

THE AULD & CONGER COMPANY, Cleveland, Ohio, report that the demand for Slate this season has been greater than ever before in their history. They have however, been able to take care of orders in a satisfactory manner on account of new machinery and other facilities installed at the quarries and larger forces of workmen.

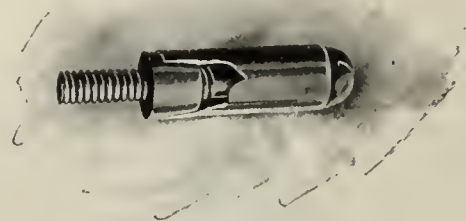
THE APOLLO WORKS of the American Sheet Steel Company, at Apollo, Pa., are being dismantled, and the mills and other equipment are being removed to Vandergrift, Pa. The Apollo plant is one of the oldest owned by the American Sheet Steel Company, and contained 12 heating and 9 annealing furnaces, 1 muck and bar train, 6 hot and 2 cold mills, and 2 20-gross ton acid open hearth steel furnaces. The product of the plant was 18,000 net tons of Black Sheets, running triple turn. It is the intention of the American Sheet Steel Company to centralize the manufacture of Sheets at Vandergrift as much as possible.

THE ELLWOOD CITY WORKS of the American Tin Plate Company, at Ellwood City, Pa., are being dismantled and the mills are being removed to Monessen, Pa. The Ellwood City Works contain 6 double Sheet and Pair furnaces, 1 annealing furnace, 6 hot and 6 cold mills. The product of the plant was Black Plates for tinning and Cold Rolled Steel Sheets, the output being 12,000 gross tons annually, triple turn. The plant also turned out 5400 boxes weekly of Tin and Terne Plate, running double turn.

THE YOUNGSTOWN IRON SHEET & TUBE COMPANY, Youngstown, Ohio, have signed the Amalgamated Association scale. The scale signed covers the Muck, Bar, Sheet and Skelp mills.

Expansion Bolts.

McCabe Hanger Mfg. Company, 532-542 West Twenty-second street, New York, have put on the market a form of expansion bolts in brass, as here illustrated, designed particularly for plumbers. It is intended for fastening marble, granite, bronze or any material in position that would be discolored by using an iron bolt. The nut and shell is brass, the screw or bolt being of the same material, nickel-plated. They can be sup-



Expansion Bolt for Marble and Plumbers' Trade.

plied in various forms, such as square, round or flat countersunk heads, in the following diameters—viz.: 3-16, 1/4, 5-16 and 3/8 inch, the lengths of each diameter being 1, 1 1/4, 1 1/2, 1 3/4, 2, 2 1/2 and 3 inches. They can also furnish this style of expansion bolt with brass bolt and nut and iron shell at a lower cost, for such purposes as a shell of that material is adapted to.

Cost of a Central Acetylene Gas Installation.

In answer to a correspondent, the *Acetylene Gas Journal* of Chicago recently published the following estimate for installing a complete acetylene plant for a "town of considerable size" (apparently about 1000 inhabitants and 150 private customers), the generator being non-automatic. Building for generators, tools, storage, &c., \$250; generators, foundation, piping and erection, \$200; 2500 cubic feet holder erected, \$2000; 1000 feet 3-inch pipe at 33 cents, \$330; 7000 feet 2-inch pipe at 17 cents, \$1190; 5000 feet 1 1/2-inch pipe at 12 1/2 cents, \$625; 3000 feet 1-inch pipe at 6 cents, \$180; laying, testing fittings, refilling, &c., at 10 cents per foot, \$1600; 150 feet 3/4-inch service pipe at \$8, with labor, \$1200; 150 meters at \$5.50, \$825; 35 iron lamp posts, complete, \$700; incidental expenses, \$300; profit to erector, \$1000; total, \$10,400. If the plant supplied 150 customers within a radius of 3 miles and produced on an average 1600 cubic feet of acetylene per day, the working charges should be: Carbide at \$70, \$336 per month; labor, carriage, water, office expenses, lighting street lamps, \$150; leakage, depreciation and taxes, \$25; total, \$511 per month. Revenue: Acetylene at \$15, \$688.50; public lamps at \$18 per lamp per year, \$52.50; total, \$741 per month. This represents a profit of \$230 per month, or \$2760 per year, which is a return of 26 1/2 per cent.

GEORGE CALLAHAN & Co., 218 Front street, New York, advise us that their Steam Joint Cement and Roof Cement are both now in use by the United States Government. The company have increased their facilities so as to be able to keep up the claim that they make very prompt shipments.

AN IMPORTANT TRADE NOTICE.

The trade in general will be interested in one of the actions taken last week at Niagara Falls by both the Central Supply Association and the Association of Manufacturers and Jobbers in Plumbing Supplies, in reference to some business details, which will affect all engaged in the trade. It is only necessary to carefully read the following notice sent out by the associations, to see the justice of the action and to conform to the changes they necessitate:

Notice.

For the general information of the trade attention is called to the following well established

TRADE CUSTOMS:

PIPE.

Wrought iron pipe is a term used to distinguish wrought from cast pipe. It is construed to mean merchant pipe, and is generally made from soft steel. Persons desiring to obtain pipe made from puddled iron must designate genuine wrought iron pipe for which an extra charge is made.

DAMAGES.

We guarantee material sold, but only to the extent of supplying perfect goods for any found defective, and will not allow any claims for labor or consequential damages. The measure of damage shall be the price of any defective piece, such defective piece to be returned before credit will be given.

RETURNED GOODS.

When orders have been correctly filled, no credit will be allowed for goods returned, nor will teamsters be permitted to accept goods to be returned unless a full explanation has been made and our consent obtained. All goods returned, if accepted, will be credited at the same price at which they were charged, less 10 per cent. and all shipment expenses.

BREAKAGE.

All goods are packed by skilled men. If an article is broken in transit, the condition of the package at its destination is no evidence of its original condition. When goods are shipped to a customer and have been receipted for by a Transportation Company, in good condition, the shipment immediately becomes the property of consignee, no allowance will be made for breakage in transit and consignee must look to Transportation Company for relief.

WILL HEATING GOODS ADVANCE?

Notwithstanding that considerable pressure has been brought to bear at the various meetings of the manufacturers of house heating boilers and radiators for an advance in prices, the conservative element has succeeded in maintaining the policy of a stable market and holding the prices of both boilers and radiators at practically the same level throughout the year. Since their recent meeting at Atlantic City the price of iron has taken another jump. In view of the stringent conditions which now prevail in the iron market and the outlook for their continuance, it is a question whether the conservative element can be induced to depart from the well established policy of uniform prices that has been of such general benefit to the whole trade by enabling a bid to be given early in the year and the contract closed at any time without anxiety as to advances and the loss to the steam fitter which attended the fluctuation of prices in the past. If the influence of the conservative element should not be strong enough to continue the present prices and an agreement is reached at the next meeting to make an advance, it is possible that quotations will be withdrawn and that higher prices may take effect before August 1, the time at which some independent concerns are contemplating making an advance. The opinion that such a contingency may arise is entertained by some steam fitters and is manifested in the promptness with which they place orders, sometimes with the request that a little time be given to prepare the specifications so that prevailing prices may be obtained. Evidently buyers have been closely studying the conditions which have an important bearing on this branch of trade and feel that conditions warrant an advance. Some reports indicate that less pressure is being used to secure lower prices,

satisfaction being expressed when no advance on present prices is asked. Indications are not wanting that some manufacturers are preparing to secure more money for their goods should iron, labor and supplies continue at the present high level.

New York City Notes.

July 1 has arrived and the new rate of wages has gone into effect. The delegates of the Journeymen's Association are busy in looking up those master plumbers who are not paying the increased rate of wages, and the Joint Conference Board are promised plenty of work at their next stated meeting.

T. C. Andrews, who was formerly an active Bronx plumber, died last week after a long illness. The funeral services were held from his late residence, 682 Eagle avenue.

Among the large jobs lately given out was the plumbing in the new power house of the Third Avenue Railroad Company, at Kingsbridge, which is to be done by Ex-Deputy Sewer Commissioner M. F. Donohue.

Local trade still continues quiet, but from present indications there promises to be a good fall business in all branches of the trade.

One of the new Civil Service tenement house inspectors was on a West Side job lately, and seeing a line coming out from a closet, asked what that water pipe was used for. He was instructed by the plumber on the job that it was the back air to the trap. As the Tenement House Department is young yet, there is time for the inspectors to learn.

Bronx Association is bound to be active for the good of its members, although just now business is at a practical standstill in that locality. The president, Peter Schweeckert, of Williamsbridge, and the new secretary, J. W. Sweeney of Bedford park, elected vice McEvily, resigned, are hustling for new members and preparing for their first annual outing.

The Plumbers' Examining Board had a very busy month in June, 30 applicants having presented themselves. Not all of them, however, passed the ordeal.

The Speakman Ventilated Urinals.

The Speakman Supply & Pipe Company, Wilmington, Del., have sent us a copy of their catalogue D, with various supplements, devoted to plumbers' brass goods and the hardware adapted for marble and slate partition work. In the supplements are shown bath lavatory supply and waste fittings and traps, as well as a variety of supports for the solid porcelain lavatories that are coming quite generally into use. Of special interest are the Speakman ventilated urinals for schools and public buildings. These urinals are constructed with an air chamber at the back of the slabs, which is connected with the ventilating flue, in which an exhaust draft is kept up continually by the burning of gas jets. The urinals are provided with automatic or positive flushing devices and are arranged to be set either in single or double row. In either case an exhaust draft is effected continuously by means of the heated vent flue, which is said to draw the air equally from each of the urinal stalls when a number are set in line.

LEWIS NUSS, Weatherly, Pa., has the contract to install the heating, ventilating and sanitary systems in the \$60,000 school building that Charles M. Schwab has presented to the town of Weatherly, and which will be named the Mrs. Schwab School. Mr. Nuss is using Sun Ray Boilers and Roman Radiators, made by the J. L. Mott Iron Works of New York. The plumbing goods made by the same house are also being used in the sanitary system.

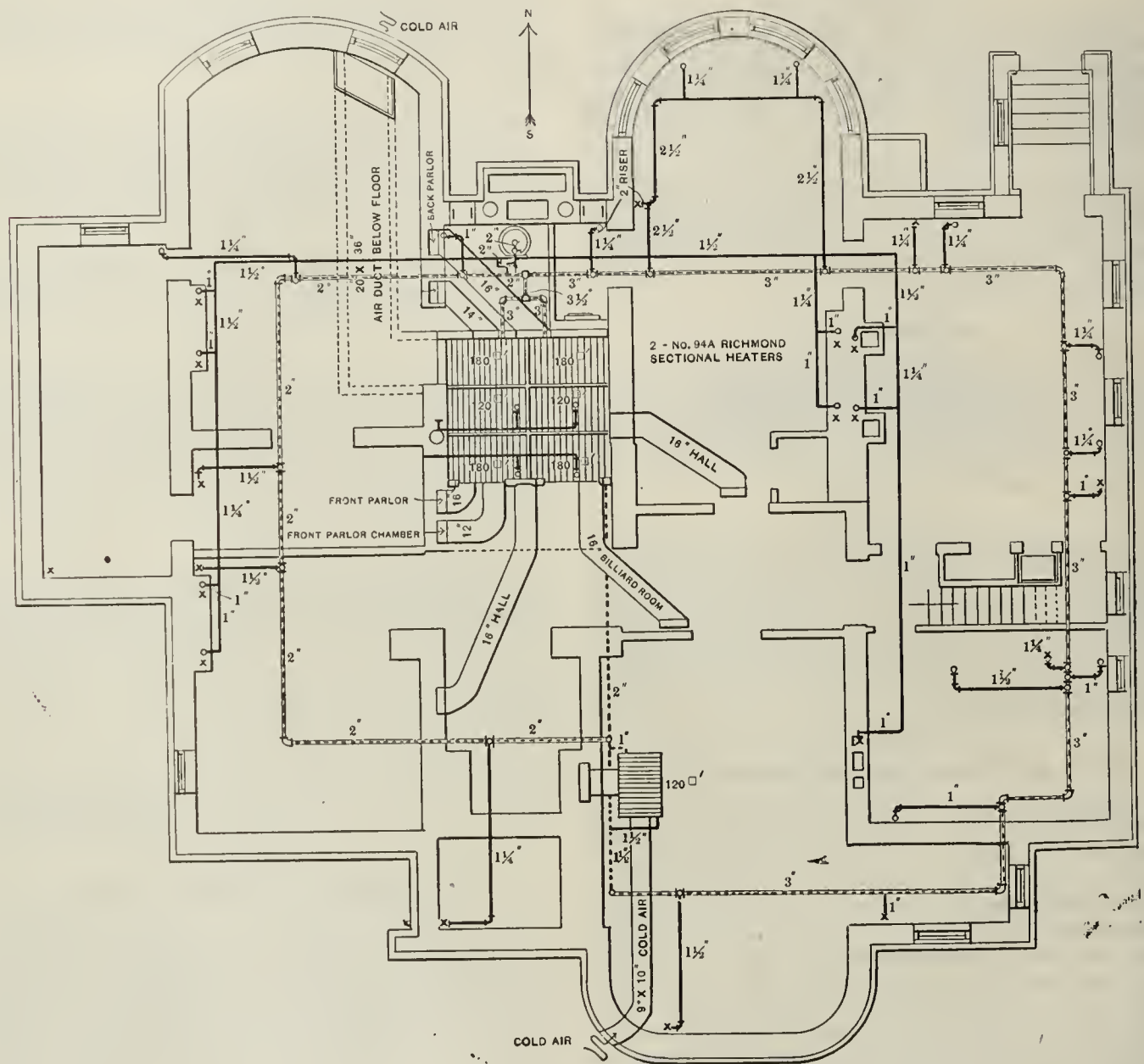
Heating and Ventilating a Residence with Steam.

The homes of Americans are famous for the comfortable temperature which prevails in them during the winter season. In arriving at this distinction many advances have been made, and the different systems of heating have been developed to a satisfactory degree of perfection. In solving the problem of heating, the question of ventilation has also received the attention to which it is entitled, and the most modern systems provide a pure atmosphere, as well as a comfortable temperature. Favor is shown those systems which supply

The location of the heating boilers, the indirect radiators and the piping system is shown in Fig. 1, which is a plan of the basement of the building. This plan also shows the location of the ventilating boiler and the pipe which runs from it to connect with the heating coils in the ventilating flues. The work to be done by the heating system can be seen from a study of Figs. 2, 3 and 4, which are plans of the first, second and third floors respectively. For the heating two No. 94A Richmond steam boilers, composed of nine sections each, are used.

THE INDIRECT RADIATORS AND WARM AIR SUPPLY.

These boilers are placed in a brick chamber and suspended above them are six stacks of indirect radiation,



Heating and Ventilating a Residence with Steam.—Fig. 1.—Plan of Basement, Showing Piping System.

continuously an inflow of pure, warm air, and their use has revealed the necessity of providing some method of exhausting the air in a building to make room for it. The open fire places which have been regarded as luxurious for a number of years are now being used to create an outflow or exhaust current by means of heat supplied from a fire or otherwise. By removing the foul air the efficiency of the heating system is increased by facilitating the inflow of fresh, pure air.

An excellent example of such a system is found in the residence of George N. Clemson, at Middletown, N. Y., which was designed by and installed under the supervision of A. McGonigle, heat for all purposes being supplied from Richmond steam boilers made by the Richmond Stove Company of Norwich, Conn. The heating system provides direct, semidirect and indirect radiation. To insure an inflow of fresh air open fire places are so arranged that when fires are not burning and exhausting the air the flues are heated by means of steam coils placed in them

the central stacks having each 120 square feet of surface, while the outer stacks have each 180 square feet of surface. Cold air for supplying these stacks is taken from the north side of the building, through a cold air duct 20 x 36 inches in size, and is brought into the chamber containing the boilers and the indirect radiators. By this means all of the heat thrown off by the boilers and the flow and return headers is used to temper the air before it passes up through the indirect radiators in the top of the chamber.

From the heating chamber hot air pipes lead, as shown, a 16-inch pipe leading to a 9 x 24 inch flue for heating the back parlor on the first floor, and a 14-inch pipe leading to a 9 x 18 inch flue for heating the chamber immediately above it. A 16-inch pipe leads from the front of the chamber to a 9 x 24 inch flue for heating the front parlor, and a 12-inch pipe is carried to a 9 x 18 inch flue for heating the chamber immediately above. There are two pipes for heating the large hall on the first floor and the halls on the second and third floors.

A 16-inch pipe is carried from the front of the heating chamber to a 9 x 24 inch flue, feeding a register near the entrance hall. A 16-inch pipe runs from the east side of the heaters to another 9 x 24 inch flue, feeding a 12 x 24 inch register in the hall under the main stairs. Another 16-inch pipe leads to another 9 x 24 inch flue for heating the billiard room on the first floor. The chamber on the second floor immediately over the billiard room is heated by means of an indirect radiator having 120 square feet of surface, placed at the base of a 9 x 18 inch flue, which leads to a 12 x 18 inch register in the billiard room chamber.

The indirect radiation placed in the heating chamber immediately above the boiler is supplied with steam by separate connections from the flow headers, and the

The plan of the second floor in Fig. 3 will show that the bathrooms, library and dining room chambers are provided with semi-direct radiators for supplying fresh air, and that the hall and other chambers are heated by an inflow of fresh, warm air. The two guest chambers on the third floor are the only rooms on that floor that are heated by an inflow of air in connection with direct radiation. From the description, it will be seen that provision has been made for the entrance of a large quantity of fresh air, and also provision has been made for heating.

DIMENSIONS AND APPARATUS.

For the benefit of those who may wish to make a closer study of the details and a comparison of proportions, the various plans give the space heated, the wall

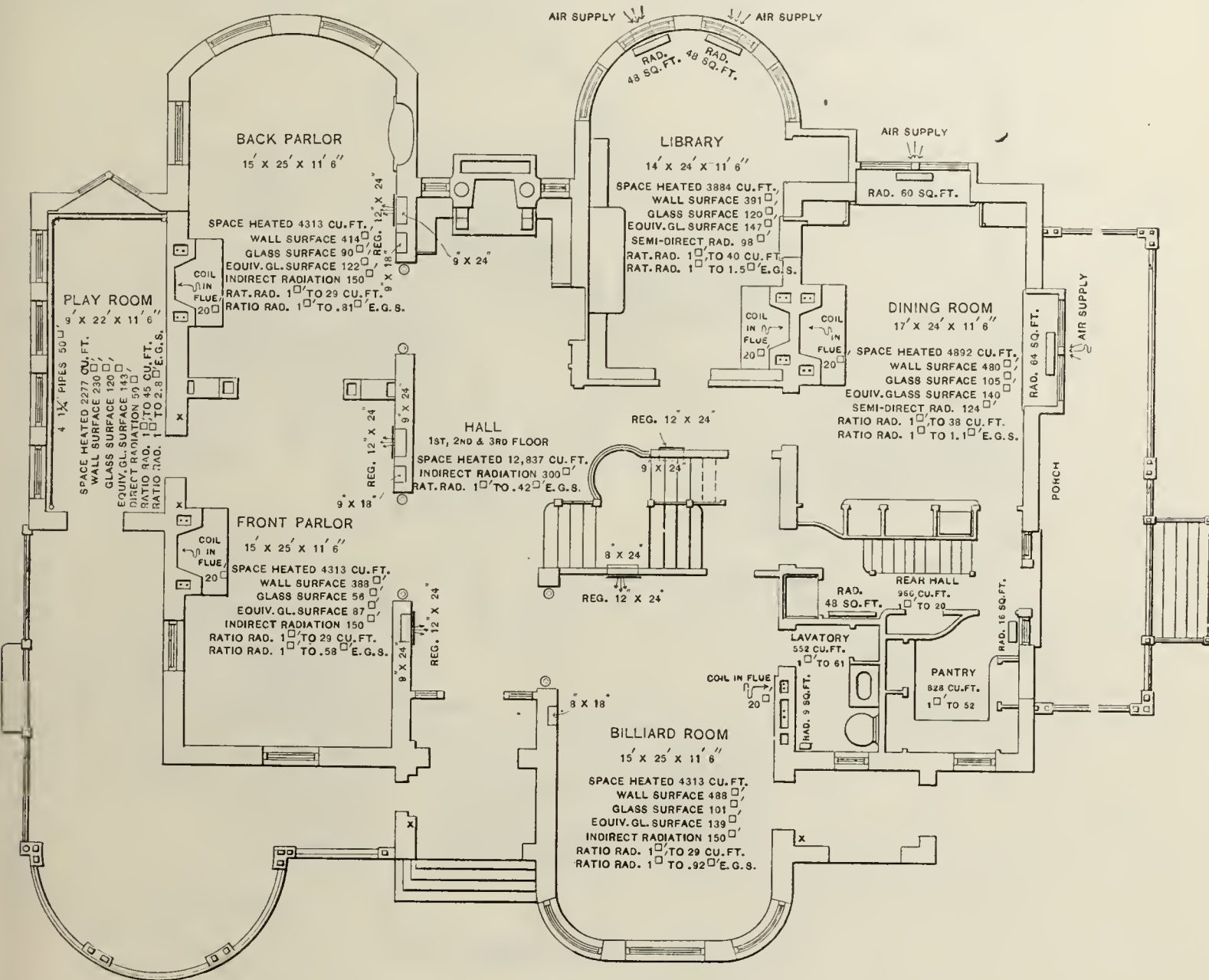


Fig. 2.—Plan of First Floor.

condensation from these radiators is carried to the main return.

THE CIRCUIT STEAM MAIN.

A 3-inch steam main is taken from each of the boilers, connected to a 3½-inch pipe and carried to the heat distributing mains, which are arranged on the circuit system. A 3-inch pipe is used to make the circuit of the east side of the building, branches being taken off to supply the various radiators shown on the plans of the upper floors. After these circuit mains pass around the building they connect into a 2-inch main return, which is carried to and connected with the return headers to the boilers. It will be noticed that the library and dining room on the first floor are heated by means of semi-direct radiators, openings being provided in the wall for the entrance of a supply of air to the radiators which is heated and distributed through the room, aiding the warming done by direct radiation from the radiators. The lavatory, pantry and rear hall are heated by means of direct radiators.

and glass surface exposed and the equivalent glass surface in each room, and also the proportion of radiation to the space heated and to the equivalent glass surface. A further study of these details will be of interest. It is found that the space heated amounts to 76,053 cubic feet, while the wall surface amounts to 7341 square feet. The glass surface exposed is 1599 feet, with a total equivalent glass surface of 2172 feet. To offset for the heat lost through this surface and to maintain a comfortable temperature at all times, two No. 94A nine-section Richmond steam boilers have been provided. Each of these boilers has a grate 36 x 41 inches in size, making a total grate surface of 20½ square feet. The boilers also have a total of 330 square feet of heating surface. These boilers must supply steam for 366 square feet of direct radiation and 1080 feet of indirect radiation.

It is generally calculated that indirect radiation adds a 50 per cent. greater tax on a boiler than direct radiation, and the 1080 feet of indirect radiation used is

equivalent to 1620 square feet of direct radiation. The tax of semidirect radiation is rated as 25 per cent. greater than direct radiation, so that the 639 feet of semidirect radiation is equivalent to 799 feet of direct radiation. This equivalent radiation amounts to 2785 square feet of direct radiating surface. By adding 20 per cent. for the surface exposed in the mains it will be found that the total tax on boilers amounts to 3342 square feet. The boilers selected for the work, however, are each rated to have a capacity of carrying 2500 square feet of surface, which shows that there is ample capacity for the work to be done.

THE RELATIVE PROPORTIONS.

Another interesting feature of this system is the proportion which the different parts bear to each other.

indirect stacks is about $\frac{3}{4}$ square inch of area to each square foot of surface exposed. The flues for carrying the hot air to the first floor bear a proportion of 11-5 square inches to every square foot of indirect radiation at the base, while those to the second floor have an area of 1 square inch for every square foot of indirect radiation at their base.

Referring to Fig. 1 it will be found that a $3\frac{1}{2}$ -inch main leads from the boiler supply to the heating mains. This main has an area of 9.8 square inches, and the area bears a proportion of 1 square inch to 136 square feet of direct radiation carried, allowing for the extra tax which the one stack of indirect radiation and semidirect radiators add to what the work would be in direct radiation.

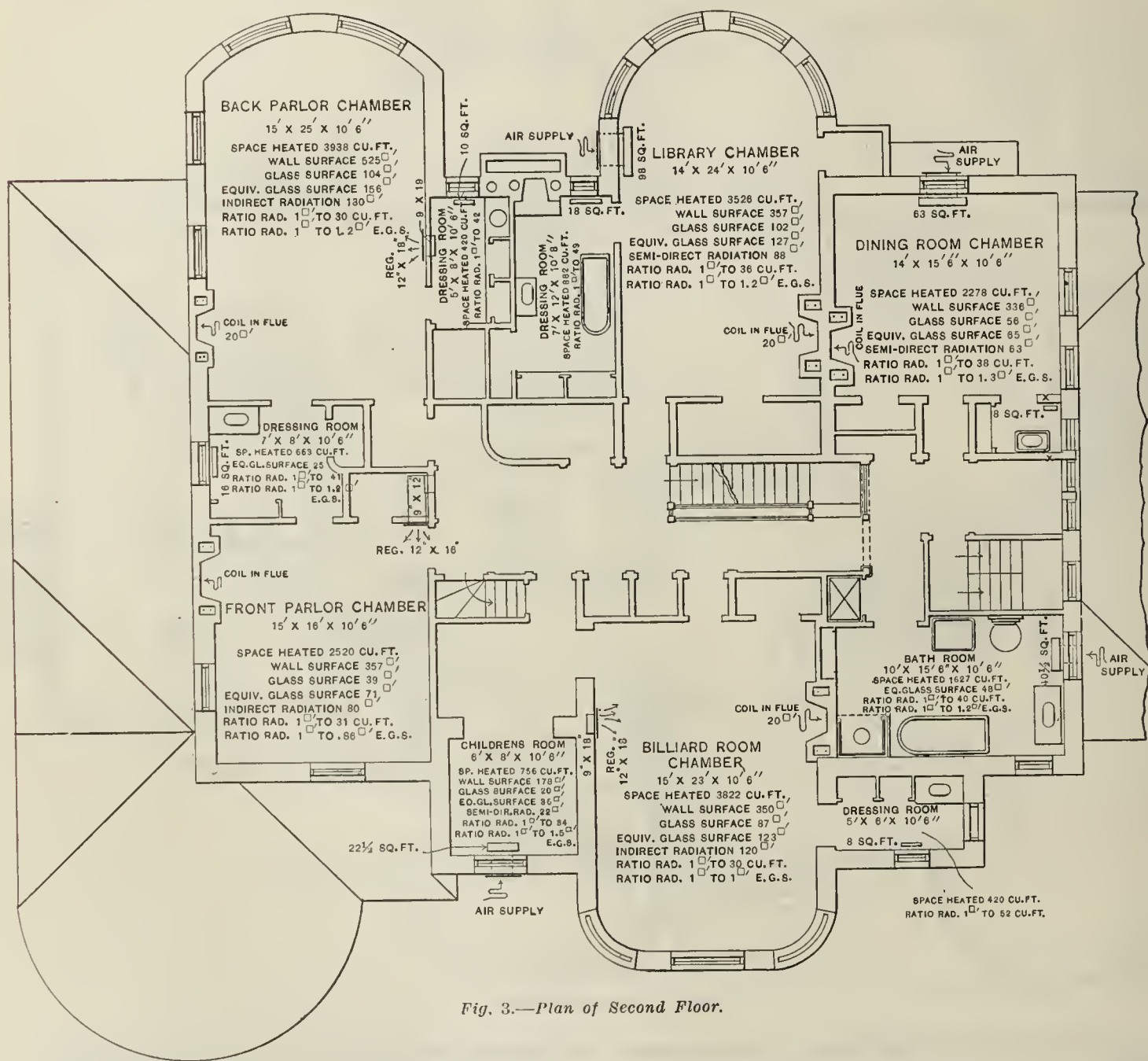


Fig. 3.—Plan of Second Floor.

The grate bears a proportion of 1 square foot to 16.5 square feet of boiler surface, to 63 square feet of direct radiation, to 3322 cubic feet of space heated, to 358 square feet of wall surface exposed, and to 106 square feet of equivalent glass surface. The boiler surface bears a proportion of 1 square foot to 10.4 square feet of radiation, to 230 cubic feet of space heated, to 22.2 square feet of wall surface and to 6.5 square feet of equivalent glass surface. The proportion of radiating surface given on the different plans shows the actual relation of the radiators used to the work done. When the equivalent in direct radiation which the boilers must carry is compared with the work done, the 2785 feet of direct radiation bears a proportion of 1 square foot of surface to 27 cubic feet of space heated, to 2.6 square feet of wall surface, and to 0.78 square foot of equivalent glass surface.

It will also be noticed that the cold air supply to the

THE VENTILATING SYSTEM.

It has already been shown that provision has been made for bringing a large volume of fresh air into the building, and it has been mentioned that open fire places heated either by fire or steam coils have been provided to exhaust the air. To accomplish this a No. 418 Richmond round boiler having a grate 18 inches in diameter and 35 square feet of boiler surface has been provided for the work of heating the coils in the vent flues.

A 2-inch main rises from this boiler and supplies two $1\frac{1}{2}$ -inch horizontal branch mains, one running in each direction, east and west. The branch main running to the west side of the house supplies the four coils placed in the flues connected with the open grates in the front and back parlors and the two chambers immediately above. The $1\frac{1}{2}$ -inch branch running to the east side of the house has a $1\frac{1}{4}$ -inch branch carried over to supply the two coils placed in the flues in connection with the

fire places in the library and the library chamber. The main is continued and supplies two coils placed in the flues connected with the dining room and dining room chamber. After supplying these coils, it is carried across to the south side of the building to supply the coil in the flue which ventilates the billiard room and billiard room chamber. These coils are arranged in the flue with a riser to a return head and a return from it, and each coil exposes 20 square feet of surface.

The surface in these coils bears a proportion of 1 square foot of surface to the varied amount of air to be handled, according to the size of the room. The proportion is 1 square foot to 126 cubic feet for the front parlor chamber to 234 cubic feet for the dining room on the first floor. As the ventilating flues are but 9 x 12 inches in size, and as the heating surface is in the shape of a riser and a return, it is calculated that there is

Valves are also placed on the heating mains, so that the steam from the small boiler can be turned into the mains of the heating system for supplying the direct radiators near it when a small amount of heat may be useful in taking the chill off a room in the mornings and evenings when a fire in the larger boilers would be unnecessary. All of the boilers are connected with smoke flues of ample capacity by means of heavy galvanized iron pipe, and the boilers are equipped with special dampers for regulating the draft and temperature automatically. This system has now been in operation several winters with satisfactory results.

The Pittsburgh Valve & Fittings Company.

The Pittsburgh Valve & Fittings Company, composed mostly of Pittsburgh capitalists, have been formally organized and will apply for a charter. The new concern

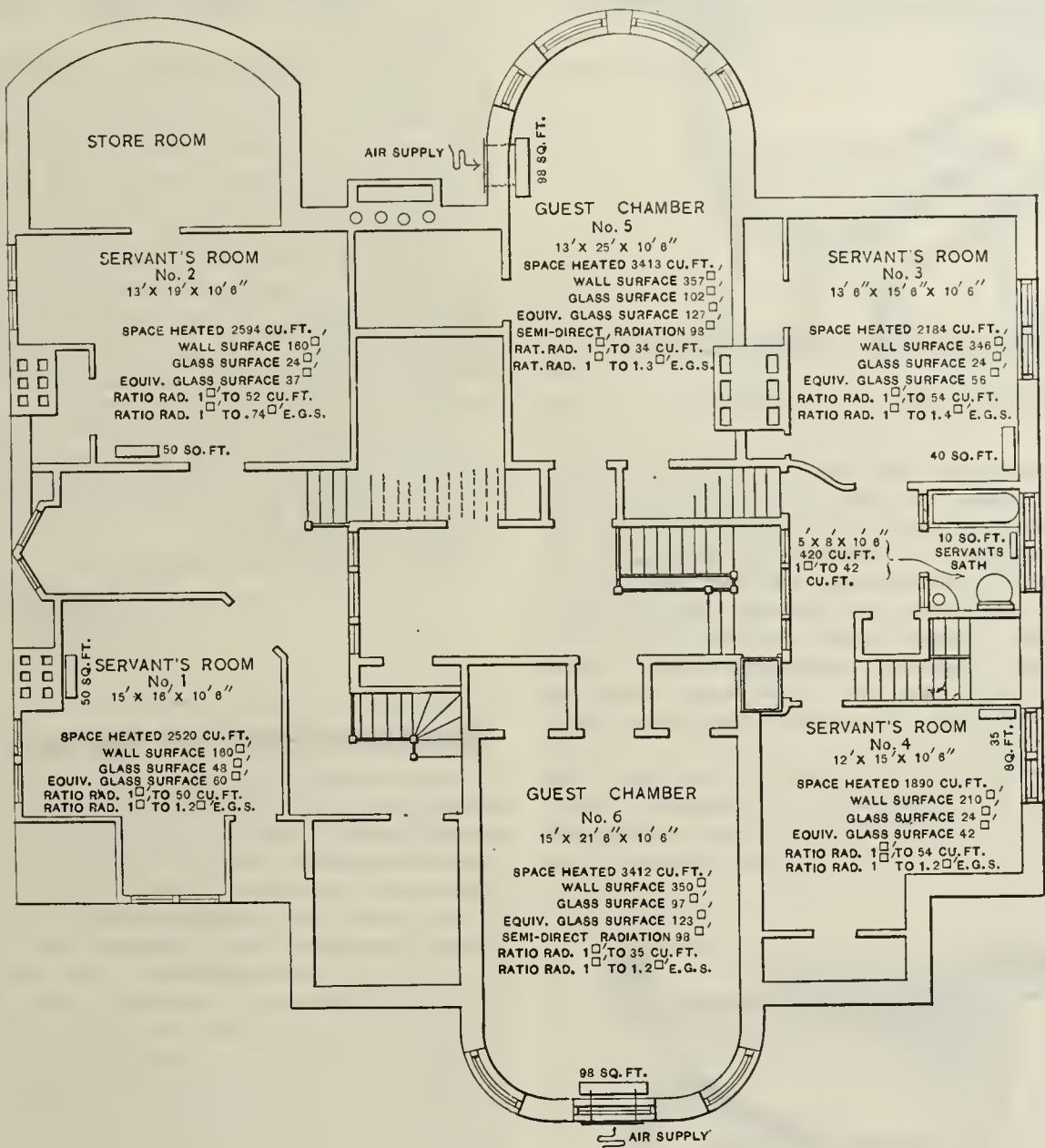


Fig. 4.—Plan of Third Floor.

ample surface to keep the air in the flue warm enough to raise the temperature of the air in the flue and create an upward movment, which will exhaust the air from the different rooms and change the air in the building at least twice an hour.

THE BOILER FOR VENTILATING PURPOSES.

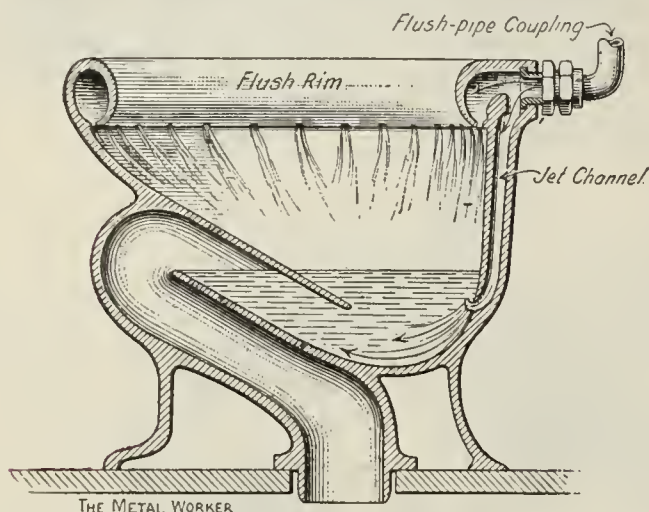
The boiler for this work is rated to have a capacity for giving 300 feet of direct radiation, and as there are but nine coils in the flues exposed, in all 180 square feet of surface, it will readily be seen that the boiler has ample capacity for carrying the surface, and also to furnish the heat that may be lost through the piping system in the cellar. This smaller boiler is provided for use during the summer season, and a connection is made between the 2-inch main of the heating system and the mains of the ventilating system, and a valve arranged so that it can be opened so that the ventilating system can be carried by the heating boilers in the winter season, when they are in use.

will build a plant at Barberton, Ohio, for the manufacture of valves and fittings. The corporation have organized with James I. Buchanan, William D. Hartupée, L. D. Castle, J. A. O'Neill and M. J. Alexander as directors, and the board have elected W. D. Hartupée president and M. J. Alexander secretary and treasurer. A site in Barberton is now being covered with buildings for the new plant. The plants call for 12, constructed of stone and brick. The first buildings will cover 4 acres. They are in a 20-acre plot, directly connected with the Baltimore & Ohio, the New York Central, the Pennsylvania and the Erie lines. The machinery is to be of special design, each machine to be operated by an individual electric motor. The company report having a cash capital at present of \$300,000. The general offices will be located at the works, which will start in March. The concern purpose to manufacture their own brass, securing copper from Montana and spelter from Illinois.

WASH DOWN SIPHON CLOSETS.

BY HELMAR.

"Wash down siphon" is a plausible name that conveys an idea of what takes place during the operation of a water closet that consists of a good combined hopper and trap, with a jet in the back. The wash down siphon closet proper differs but little in principle from a jet siphon closet, except in the location and character of the jet. A portion of the flush water is diverted through a channel and discharged into the bowl at the back, somewhat as shown in Fig. 1. Actual siphonage depends on the shape of the trap, as well as the height, size



Wash Down Siphon Closets.—Fig. 1.—Wash Down Siphon Jet Closet.

and angle of the jet. The lower and more submerged the jet, the quicker and stronger the siphonage should be. The higher the jet, up to a reasonable limit, the quicker the jet water will wet and cut the paper down. It is the energy of the jet water and the direction the jet is thrown that causes the siphonage, which from the top of the bowl appears to be genuine. In the wash down the shape of the trap has much to do with directing the jet water, while in the jet siphon closet the curve of the trap wall has nothing to do with directing the water from the jet.

A combined hopper and trap with extra heavy fan wash at the back of the flush rim, as indicated in Fig. 2, is said to be a wash down siphon. They are much easier made in iron than the closet with jet channel in the

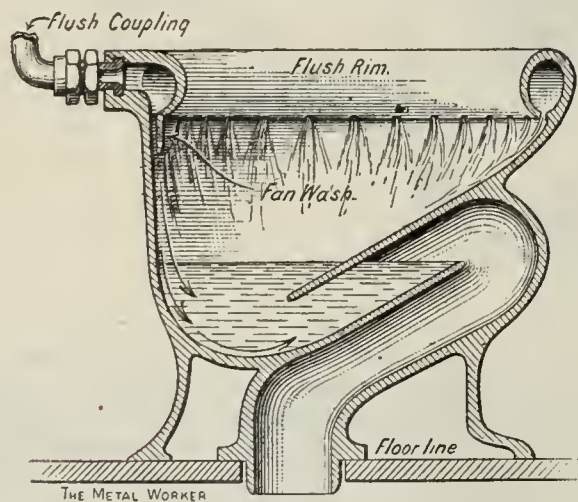


Fig. 2.—A Plain Wash Down Siphon Closet.

back and usually wet and cut the paper down better and quicker than the jet closet does. When made to sell as wash downs the action is usually good, but the trade favors the jet because its service need not be sacrificed in any sense in favor of wetting the paper. The flush rim can be made to take care of the paper and the jet left to operate wholly on the contents of the trap.

Wash down siphons are made both in iron and earthenware, and sell at a lower price than jet siphon closets. Two-inch spuds are usual when low tanks are used, but for high tanks 1½-inch flush answers.

The Late Samuel L. Malcolm.

The following resolutions were adopted by Manhattan Branch, Association of Master Plumbers of the City of New York, upon the death of their late president, Samuel L. Malcolm. The resolutions were suitably engrossed and presented to his family by the committee on July 1:

Whereas, Almighty God in his wisdom has seen fit to remove from us our fellow member, Samuel L. Malcolm; and,

Whereas, By his death this association has lost one of its oldest and most highly esteemed members. Therefore, be it

Resolved, That this association wishes to place on record and express in this form the personal respect and affection in which he was held by all our members. Active in the performance of his personal duties and interest in association work to the day of his death, his sudden passing away was a shock to his many friends; so be it further

Resolved, That we here testify to the personal worth as a member of this association of our deceased friend. His standing and record in the trade was one of honor and credit. He was a man whose friendship and good will were highly valued. Our association was highly honored by his connection with it, and benefited by his wisdom and good judgment. His whole life was an example and model of manhood's best qualities. In time of national danger he served with honor his country on the field of battle. In days of peace he labored with self sacrifice to perfect his trade organizations, local, State and national. The recognition of his ability was shown by his election to the office of president of both local and national associations of master plumbers, which positions were filled with honor, both to the office and the man. Therefore be it finally

Resolved, That to his bereaved and sorrowing family we present, in all sincerity and respect, our most profound sympathy and condolence on their great loss, and that these resolutions be entered on the minutes of this association and a copy duly certified and engrossed be presented to his family.

Adopted unanimously June 3, 1902.

W. J. McDERMOTT,
ALEX. BRYANT,
PHILIP BRADY,
JOHN RENEHAN,
Committee.

International Steam and Hot Water Boilers.

Steam fitters and heating contractors will be interested in the new catalogue just issued by the International Heater Company, Utica, N. Y., devoted to the International steam and hot water boilers. The catalogue consists of 44 pages, printed in two colors on paper of high finish and bound in a drab cover. The introduction states that this catalogue shows the several lines of boilers manufactured by the house and calls attention to the enviable reputation their goods enjoy. In enumerating the claims for efficiency, economy and convenience, attention is first called to the report of an engineer on a trial duty test. The statement is also made that every boiler is mounted complete and tested before leaving the factory, then carefully taken down and packed so that the purchaser is sure of having an accurately fitted piece of goods. The product of the company is marketed through the trade only, they doing no contracting or installation work.

The first section of the catalogue shows, by means of general, partly assembled and broken views, the construction, surface and fire and water travel of the Carton boilers, and the text, in addition to giving a detailed explanation of the construction and operation, states that the boilers are made with grates 20, 32 and 42 inches wide. The next section of the catalogue is devoted to the Palace Queen vertical sectional boiler of the return flue type, adapted to a wide variety of use, although not made in sizes for the heavy duty that the Carton is designed for. The Palace Regent, or Carton E, is made for both steam and hot water heating, and is cast in one piece, with water chamber diaphragms so arranged as to secure both a large fire surface and an indirect draft. The International F series and the Palace King steam and hot water boilers are made with round fire pots and are of the horizontal sectional type, the flue openings being staggered so as to secure an in-

direct draft and the principal heat of the products of combustion. The International G series boiler is designed for heating hot water storage tanks or for smaller work, and is made in a variety of sizes of capacities ranging from 75 to 425 square feet of direct hot water radiation.

The remaining pages of the catalogue contain much matter of interest and assistance to heating contractors who design steam and hot water heating systems for residences and greenhouses, and also gives information as to the size of chimney, which is indispensable in the operation of large boilers carrying a large amount of radiation. The catalogue contains neither prices nor ratings, which will be sent separately on application to all who desire them.

Heating and Plumbing Notes.

THE ROME SANITARY WORKS, Rome, N. Y., are sending out circulars devoted to their guaranteed Enameled Bathtubs. One circular, printed in blue and brown, is devoted to the Romania, a new shape combining the advantages of both the French and Roman patterns. This Tub has a 3-inch rim, is 29 inches wide over all, 17 inches deep on the inside and stands 23 inches high on the legs. This is said to be a high grade Tub in both material and workmanship, and is adapted for the various styles of supply and waste fixtures.

THE COLUMBUS BRASS COMPANY, Columbus, Ohio, have favored us with a copy of a circular devoted to their Automatic Flushing Tanks, which are made both with a bent wood shell and with a square shell having rounded corners. The Tanks are also furnished with molded tops when desired. They are made in different kinds of wood and finish adapted for urinals, and of different sizes to suit from one to ten urinals. The operation is said to be as perfect when arranged to flush once in three hours as when arranged to flush once in three minutes. It is further claimed that variation in water pressure does not affect the operation of the Tanks.

THE GURNEY HEATER MFG. COMPANY, Boston, Mass., have recently been distributing among their friends in the trade a neat transparency designed for use in a conspicuous place on either a door or a window. It is accompanied by instructions for affixing to the glass so as to produce the best results. The transparency measures 9 x 11 inches and is printed in two colors. In the center is a general view of a Gurney Heater, which appears in black upon a green groundwork. Above this in red and black is the inscription, "We sell Gurney Heaters; Hot Water or Steam," while below the Heater are the words "Always Reliable."

ANDREWS & JOHNSON of Chicago bid \$3600 and secured the contract for putting a ventilating fan in the City Library at Des Moines, Iowa.

CORRY & WERNENTINE COMPANY bid \$1167 and secured the contract for installing the heating system in the new East Hill High School Building at Muscatine, Iowa.

THE P. R. CRAWFORD HEATING & PLUMBING COMPANY of Cleveland, Ohio, have the contract for installing the heating and power plant at the new works of the Structural Steel Company at Canton, Ohio.

B. J. LOGIERS, Paterson, N. J., bid \$5908 and secured the contract for heating, plumbing and gas fitting in the new building of Louis F. Braun.

T. F. DEXTER of Portland, Maine, representative of the Warren Webster Company and the American Steam Heating Company of Camden, N. J., is superintending the installation of the Webster system of heating in the Lafayette Hotel, at Portland, and the Penobscot County Court House, Lewiston, Maine.

THE WELLS & NEWTON COMPANY, New York City, bid \$9585 and secured the contract for the heating, plumbing and gas fitting in the new plant of the Verona Chemical Company.

WARDEN & LEESE, Marion, Ohio, have the contract for plumbing the new building of the Cleveland Bakery Company.

WILLIAM H. BURNETT, manager of the plumbing department of the Stamburgh-Thompson Company, Youngstown, Ohio, has secured the contract for plumbing a \$60,000 apartment house.

THE FARGO PLUMBING & HEATING COMPANY of Fargo, N. D., have the contract for the heating system and electric wiring for the new McHench Building in that city.

R. W. WALKER, chief of the Sanitary Department of Birmingham, Ala., in his report for 1901, urgently recommends the appointment of a competent inspector of plumbing.

THE first meeting of the stockholders of the International Steam Pump Company of New York City for the election of officers was held at Lockport, N. Y., recently, when the following officers were elected for the ensuing year: Directors, J. W. Dunn, Max Nathan, C. L. Broadbent and Arnold Tanzer of New York; E. C. Lufkins of Buffalo, T. E. Ellsworth and N. M. Clark of Lockport. The Board of Directors elected T. E. Ellsworth of Lockport, president; E. C. Lufkins of Buffalo, vice-president and general manager; N. M. Clark of Lockport, secretary, and Max Nathan, New York, treasurer.

GEORGE M. COUCH, Hartford, Conn., has the contract for installing a 1700-foot Carton Steam Boiler in a building for E. S. Drake. He has recently completed the installation of a 2000-foot Carton hot water heating plant.

A VERY neat pamphlet printed in two colors received from the Pierce, Butler & Pierce Mfg. Company, Syracuse, N. Y., is devoted to the Pierce Florida Steam Boilers and the Tropic Hot Water Boilers, of both the surface burning and magazine feed type. These Boilers are shown by means of general and broken views and views of partly assembled Boilers, so that the construction, heating surface and fire and water travel can be readily understood. These Boilers are made in a variety of sizes, with fire pots ranging from 16 to 36½ inches in diameter, and rated to carry from 375 to 2100 square feet of direct steam radiation.

T. C. PULSFORD, superintendent of the works at Leicester, England, of Ashwell & Nesbit, Limited, of London, is making a visit to the United States for both pleasure and business. He doubtless will be afforded a cordial welcome through the kindly feeling entertained by many American heating engineers for D. M. Nesbit, who has an extensive acquaintance in the United States.

J. H. LESLIE, formerly of Hillsboro, Va., informs us that he has removed his Plumbing, Wind Mill and House Heating business to Leesburg, Va., where he has facilities for carrying on the business on a much larger scale than heretofore. Mr. Leslie is desirous of receiving catalogues from houses manufacturing goods in his line, also price-lists and discounts.

THE KEYSTONE VALVE & MFG. COMPANY, Pittsburgh, Pa., recently incorporated, have secured a site 20 x 110 feet on Carson street, where they will immediately erect a two-story building, part of which will be used as a brass foundry and the rest as a machine shop.

THE LIMBERG ENAMELING COMPANY, Cincinnati, Ohio, have secured the building and equipment of the Enterprise Foundry Company in that city, to which they will remove from their present works, and also make considerable additions. In addition to making castings for their own use in the manufacture of Sanitary Goods, the company will conduct a jobbing foundry business. In the new plant the company will secure facilities which will enable them to about double their present output.

WORK on the new factory of the Sterling & Skinner Mfg. Company, Chicago, is being pushed rapidly to completion. The firm intend to manufacture Brass Goods for steam, water and gas. R. R. Sterling, F. C. Skinner, E. J. Roney and J. F. McDougall are all experienced men, having formerly been with the McRae & Roberts Company. They now have temporary offices on the fifth floor of the Chamber of Commerce Building.

MENAB & HARLIN of New York City are adding another story to their foundry building at Paterson, N. J.

T. J. O'MALLEY has been appointed plumbing inspector at Scranton, Pa.

THE BUFFALO, N. Y., ACADEMY OF MEDICINE recently adopted resolutions recommending the speedy selection of a heating and ventilating system for the public school buildings of the city. The majority favored the use of a mechanical system of heating and ventilation, although one member maintained a positive opposition to the use of mechanical apparatus.

JOHN F. HANSON, a well-known and highly esteemed citizen of Providence, R. I., died suddenly on Monday afternoon, June 23. Mr. Hanson was born in Liverpool, England, in 1844. As a young man he acted as a book-keeper, but he had started in the plumbing business a short time since. Mr. Hanson was a veteran of the Civil War, a Free Mason and an Odd Fellow. His death was due to apoplexy. He is survived by a daughter and a son.

MAYOR CONWAY of Troy, N. Y., has appointed Thomas H. Lodge and John J. Powers members of the Board of Plumbing Commissioners.

THE Master Plumbers' and Heating Engineers' Mutual Protective Association have been incorporated, with office at 218 Clay street, Paterson, N. J. The members are Robert Beaumont, James H. White, William McCuen, David McGinnis and Robert Quinn.

THE UNITED STATES SANITARY MFG. COMPANY announce that they have established a New York office in the St. Paul Building, 20 Broadway, where all communications relating to prices or orders should be addressed. The New York office will be under the management of C. A. Jaynes. It is the intention of the United States Sanitary Mfg. Company to make a complete line of up to date Enameled Sanitary Goods, and they will mail from time to time advance sheets of their forthcoming catalogue, which will be issued as promptly as possible after the patterns are completed. At the present time their new foundries and enameling plant are working to their full capacity, and they are now in a position to furnish all sizes of 2½ and 3 inch Roll Rim Bathtubs, together with a number of styles of Lavatories, Sinks, &c. All goods will be marketed through the jobbing trade.

L. O. KOVEN & BROTHER, 50 Cliff street, New York, manufacturers of high pressure Galvanized Range Boilers, are enlarging their plant in Jersey City, which now has a frontage of 250 feet on Mountain Road and 525 feet on Paterson Plank Road. The improvements consist of an addition of 10,400 square feet to the boiler plant, equipped with new tools for making large size Hot Water Tanks and Heavy Plate Iron Work, and a warehouse 40 x 80 feet, for the storage of Black and Galvanized Riveted Pipe. The firm recently completed a new three-story brick warehouse and removed the blacksmith shop to a larger site, equipping it for doing heavy forge work. They also contemplate the building of a furnace house and flanging department, in which will be installed modern appliances for doing this class of work more rapidly.

BIDS will be received until July 29 by the Supervising Architect at Washington, D. C., for a low pressure steam heating apparatus for the Post Office Building at Joliet, Ill., and until August 13 for a similar apparatus for the Post Office at Freeport, Ill.

ELIAS BERIA bid \$5622 and secured the contract for the plumbing work on the extension to the plant of the Crocker & Wheeler Company at Ampere, N. J.

THE CHANDLER PUMP COMPANY, Cedar Rapids, Iowa, inform us that they are building a new foundry 75 x 110 feet in size, also a new warehouse 50 x 154 feet, of two stories and basement. The company have in course of preparation a new catalogue which will be issued in a few days.

C. D. FISHER, representing the Board of Trade of Wapakoneta, Ohio, has closed a contract with a Chicago concern to establish their plant in Wapakoneta. They manufacture Acetylene Gas Generators, Stoves, Pans and other products, and in consideration of a bonus of \$12,000 and 15 acres of land they have agreed to establish a plant employing 50 men the first year and 100

men by the third year. It is announced that work on the plant will start at once.

THE NATIONAL TUBE COMPANY of Pittsburgh recently filled an order through a jobber for a considerable amount of Pipe for shipment to the Cape Nome gold fields. The quantity involved is said to have been 1800 tons.

THE trustees of the State Asylum for the Blind at Columbus, Ohio, will ask for bids on extensive improvements to the lighting, heating and plumbing systems of the institutions. Plans have been prepared by Stribling & Lum, architects. The improvements will cost about \$36,000.

THAT the "Glorious Fourth" is an institution worthy of celebration is a positive conviction with the Gurney Heater Mfg. Company, Boston, Mass., is evident in their act of sending to every contracting steam fitter a package of firecrackers with which to celebrate the day. *The Metal Worker* acknowledges the receipt of a package, and though the red paper cylinders show from the outside the inside rings with independence. The statement is made that the success of the house is due to independence of thought, ideas, action, design, construction and methods of manufacture and dealing which have become as dear to the trade to which they are devoted as is noise to the young American.

THE AMERICAN RADIATOR COMPANY, Chicago, are sending their compliments to the trade under a neat and attractive cover, grouping under the head of "Heating Advertisements That Aid," a number of electrotypes burdened with "catchy" facts, setting forth the merits of the hot water and steam radiating system, supplemented by extracts from scientific, medical and trade papers, among the foremost being *The Metal Worker*. Another catalogue, just issued by the company, calls attention to the advantages to be derived from the Acme Fire Box Boiler, entering into a history of the evolution of the Fire Box Boilers, and the principles of construction of the Acme, including the material used and the quality of workmanship in the manufacture of these Boilers, accompanied by instructive illustrations. Incidentally, the brick setting and Tank Heaters are considered and pertinent remarks made regarding chimneys and drafts. The catalogue is supplemented by a telegraph code of special interest to the trade in facilitating the transaction of urgent business.

New Firms and Changes.

THE UNITED STATES PUMP & SUPPLY COMPANY have been incorporated at Camden, N. J., with a capital of \$320,000, to manufacture Pumps, Wind Mills and Farming Implements. The incorporators are Roscoe Bean, George E. Pomeroy and Daniel J. Nysenande.

THE FEDERAL MFG. COMPANY, 1290 Old Colony Building, Chicago, are a new company organized to manufacture Plumbing Supplies. They will make a specialty of manufacturing a Faucet invented by Arthur O'Neill.

CAHILL & SMITH are a new firm at Pittsfield, Mass., composed of William Cahill, who has been plumbing inspector in the city, and Herbert Smith, another practical plumber.

THE RICHMOND PLUMBING & MANTEL COMPANY have been incorporated at Richmond, Va., with a capital of \$25,000, to do a general plumbing, gas fitting and electric wiring business. The officers are: J. Graham Davidson, president; W. T. Yarbrough, vice-president and general manager; H. T. Burnley, secretary and treasurer. The officers, with J. Temple and T. K. Sands, form the Board of Directors.

CARTER, ADAMS & Co. are a new firm in the plumbing business at 54 State street, Bangor, Maine.

GEORGE CURTIS has opened a plumbing shop in Gardiner, Mass.

HERBERT R. FITTZ AND CHARLES K. BARKER announce that they have succeeded to the plumbing, heating, tin and sheet metal business of the W. D. Parlin Hardware Company, Natick, Mass., under the firm name of Fittz & Barker. The new firm will continue the business at the old stand, 20 Main street, Natick. Both members of the firm have been connected with the old company for many years.

Sun Ray Boilers and Roman Radiators.

The J. L. Mott Iron Works, 84-90 Beekman street, New York, have just issued a 96-page catalogue printed on highly finished paper, covering the extensive line of boilers and radiators which they manufacture. The first 40 pages of the catalogue are devoted entirely to the Sun Ray boilers, made in a variety of sizes and series, principally of the vertical sectional return flue type, with grates varying from 20 inches to 48 inches in width.

A closer examination of the catalogue discloses two entirely new constructions. One is an improvement in construction on what is quite generally termed a "dog house" type of boiler. This boiler presents a large surface near the fire, from which the products of combustion rise into side flues and pass through a central return flue to the other end of the boiler and the outlet. These boilers are made with 19, 20 and 24 inch grates, the grates being increased in size with the number of sections used, and the boiler being of the push nipple construction. The other boiler is of the vertical sectional type, designed for large work, the construction providing back of the fire chamber for a bridge wall and a diving flue, with the view of utilizing to the greatest practicable extent the heat of the products of combustion. By an ingenious construction of the grate the fire in these large boilers can be kept in a live condition with a minimum expenditure of labor. The catalogue also shows a number of styles of small heaters and tank heaters, so that the Sun Ray line furnishes water heaters in capacities ranging from 100 square feet to 10,000 square feet of surface for hot water, or from 300 to 8000 for steam.

The latter part of the catalogue is devoted to radiators, the first place being given to Mott's Roman radiators, which are made in two and three columns in all heights. These are followed by fluted radiators and a plain two-column radiator. The Utility radiator is made with six columns, in heights varying from 13 to 26 inches, and is especially designed for use under windows. Another radiator is the Premier wall radiator in two sections, 12 x 24 inches. It is designed for connecting together so as to provide whatever amount of surface may be required. Concealed brackets for hanging radiators on a wall so as not to interfere with carpets or floors is another specialty. The catalogue presents views of corner, window, column, dining room and stair radiators, to show the variety of styles in which the goods can be furnished. Box bases for dampers for use in connection with radiators when they are used as direct indirect heaters are also shown, together with several styles of pin and prime surface indirect radiators.

In addition to radiator valves, expansion tanks and other steam fitting supplies, the Toby automatic water heater and steam traps are presented. The catalogue also contains a variety of useful information and gives full instructions for setting and operating boilers, as well as special information in reference to radiators and their tappings. A telegraphic code completes the catalogue.

Penn Radiator Catalogue.

A very convenient piece of trade literature devoted to the radiators made by the Penn Radiator Company, Corry, Pa., has just been issued by that concern. It is printed in two colors and consists of 64 pages, with a well arranged index. The front cover bears a picture of William Penn and the address of the house presented upon a green background. The catalogue opens with half tone engravings of the Penn two and three column radiators, followed by the Classic and Acme flue radiators. Illustrations are also given of the Gem, Pearl, Leader, Hercules and Brown radiators, with engravings showing the adaptation of the various radiators for direct indirect work. A variety of styles of indirect radiators are also presented. The radiators are shown arranged for windows, stairs and for use around columns. Interspersed with the text are half-tone engravings of a number of public buildings in various cities and country towns in which the company's radiators are used for heating.

Applications for Space at St. Louis World's Fair, 1904.

The Department of Manufactures of the St. Louis World's Fair of 1904 are now issuing, upon request, blank applications for space. These applications are designed to provide the exposition officials with information as to what establishments intend to exhibit, what the requirements of exhibitors are in regard to electricity, steam, gas, water, compressed air, sewerage, &c., and how much space is desired. The form to be filled out designates the following: Date of application, name and address of exhibitor, general nature of exhibit; dimensions of space desired, in length and width and total square feet; kind of space (wall or floor); description of exhibit, with scale drawn. The following questions are also asked in the form:

Is electricity, steam, gas, water or drainage required? (quantity and purpose must be specified).

Is intended exhibitor a manufacturer or a producer?

Are special foundations required? If so, full particulars.

Will intended exhibitor manufacture on space?

Is a concession to sell articles or products desired?

These applications, properly filled out and forwarded to the exposition authorities in St. Louis, will secure to all requests for space consideration in the order of their merit.

Those intending exhibitors, therefore, who respond promptly by filling out and returning applications sent them, can hardly fail to receive all that they need for a successful exhibit and will, in addition, thereby save considerable expense in their installations, as an increase in the time at command always means a decrease in cost of preparation. In the same way the efficiency of exhibits may also be materially increased as the best results in design and detail can only be obtained by the use of much thought and time. Many things, indeed, pertinent to a proper display of the processes, machinery or products of an exhibitor, depend upon the promptness with which application for space is made.

The filing of such applications implies no obligation; no pecuniary consideration enters into contracts for space. There is no charge for exhibition space. In fact, where practicable, every expense has been eliminated in order that the exhibitor may apply all of his appropriation in making an attractive and effective installation. Even power and light will be furnished free when in the judgment of the exposition authorities it is warranted.

The strike of metal polishers, buffers, platers and brass workers, which has been on in Cleveland for the past two months, has been declared off and the men returned to work on Monday of this week. The men struck for a nine-hour day and an increase in pay. By the terms of the agreement they will receive a nine-hour day or a 54-hour week, but the rate per hour remains as heretofore. The strike has been a bitter one and in several of the shops the men were enjoined from interfering with imported nonunion men. A large sum was paid out in strike benefits by the Polishers' Union.

David Randolph Morse of the firm of Howard & Morse, manufacturers of wire goods and ventilating appliances, at 45 Fulton street, New York, died on Saturday, June 28, at his home, 112 Fort Greene place, Brooklyn, N. Y. Mr. Morse was born in New Market, N. J., March 3, 1835. In addition to his membership in the firm of Howard & Morse he was connected with several financial institutions, and was a director of the Manufacturers' Association of New York. He was also a trustee of the Washington Avenue Baptist Church of Brooklyn.

We have received from Alfred E. Lister, secretary of the Scranton Engineers' Club, Scranton, Pa., a copy of the 1902 directory of the club, containing the names and addresses of the officers, committees and members, together with the charter, constitution, by-laws, &c.

THE LETTER BOX.

Inquiries in regard to practical questions of general interest are invited, in reply to which we shall be glad to receive suggestions and information from our readers.

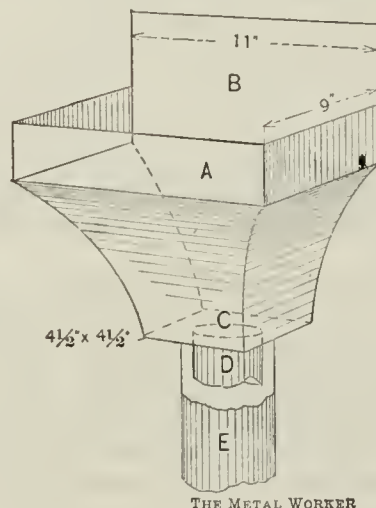
Correspondents are requested in all cases to give their names and addresses, which will not, however, be published or disclosed without their consent.

PATTERNS FOR LEADER HEAD.

From G. W. G., New York.—Will you, through the columns of *The Metal Worker*, kindly give me a method how to lay out a leader head to given dimensions, as shown in the sketch, Fig. 1, in which A is the leader head, 9 x 11 inches at the top and 4½ x 4½ inches at the bottom. B indicates the flange, extending upward on the back. C indicates the opening out into the bottom, to which the tube D is connected, and E shows the leader partly broken, showing how the tube D enters into the same in practice.

Answer.—There are two methods by which this head can be laid out. The first, or more complicated, method is to first draw a plan view of the given dimensions; then establish a given profile on either the front or side views, and follow the principles given in Problem 80 in "The New Metal Worker Pattern Book." The second, and simpler, method, such as is generally used in shop practice, is shown in Fig. 2, which is drawn to a scale of 2 inches to the foot.

First draw the side view of the head, as shown by A B C D, making A B equal to the desired width, or 9 inches, B C to the required height, and C D to the de-



THE METAL WORKER

Patterns for Leader Head.—Fig. 1.—Reproduction of Correspondent's Sketch.

sired width of 4½ inches. Then draw the profile A D. In line with the side view draw the one-half front view, as shown by E F G H, making G H equal to one-half the width of the front view, or 5½ inches, and F E equal to one-half the desired width of 4½ inches, or 2¼ inches. Then draw the profile H 2' E. It will be noticed that owing to the difference in the projections the two profiles in front and side views are unequal.

To obtain the pattern for the front view proceed as follows: Divide the profile A D in the side view, as shown by the small figures 1 to 6. From these points, at right angles to B C, draw lines intersecting the profile H E in the front view from 1' to 6', as shown. Now extend the center line G F as shown by F M, upon which place the stretchout of the profile A D in side view, as shown by the small figures 1 to 6 on F M. At right angles to F M and from the small figures draw lines, which intersect with lines drawn parallel to the center line from similar numbered intersections in H E. Through the points thus obtained trace a line, as shown by 1 6 O N, which represents the half pattern for the front of the head to be formed after the profile A D in side view.

For the pattern for the side extend the line B C as shown by C P, upon which place the stretchout of the profile H E in the front view, being careful to transfer each space separately upon the line C P, as shown by points 1' to 6'. At right angles to C P and through the

small figures draw lines, which intersect with lines drawn from similar numbered points in the profile A D parallel to B C. Trace a line through intersections thus obtained, as shown by R S. Then will R S 6' 1' be the pattern for the sides, formed after the profile H E in

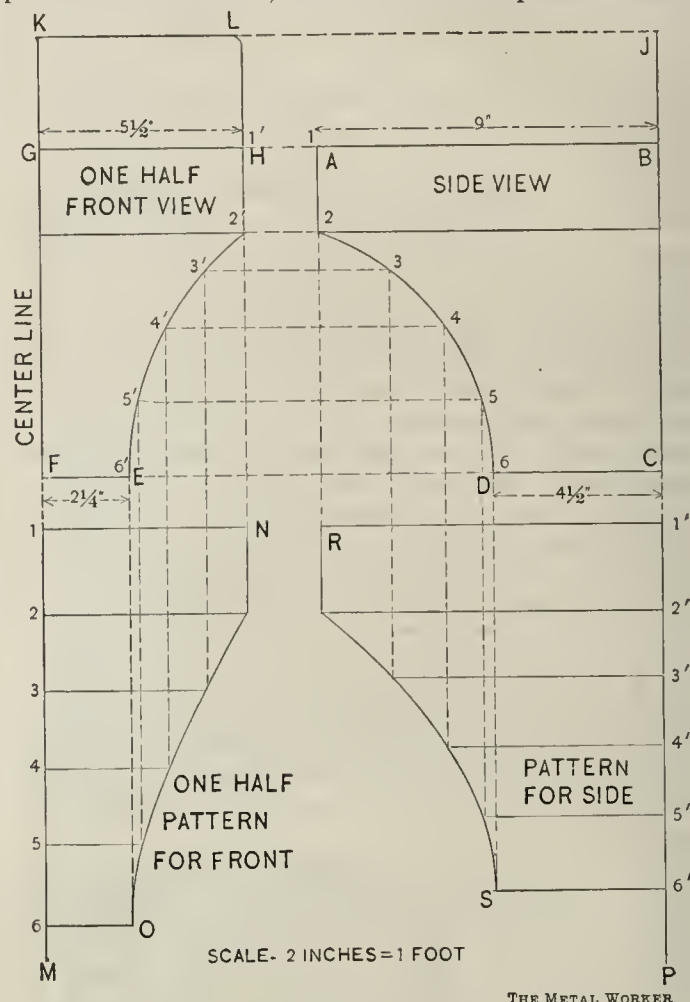


Fig. 2.—Front and Side Views and Patterns.

front view. J, in the side view, indicates the rear flange, shown by B in Fig. 1, and by G K L H in front view in Fig. 2.

The pattern for the back is pricked direct from the front elevation, one-half of which is shown by K L H E F G K. Trace the other half opposite the line K F.

WHOMAKESBRITANNIA METAL MOUTH-PIECES FOR BUGLES?

From James C. Gormly, 320 Third street, Macon, Ga.—Will you, or some of your readers, kindly advise me where I can buy britannia metal bugle mouthpieces, such as are soldered on to tin bugles and tin horns? I used to get them from the jobbers in tinnery supplies, but of late they seem to have stopped handling them and have been unable to procure them for me.

ARTISTIC ENAMELED RANGES.

From J. V., Pittsburgh.—On page 42 of *The Metal Worker* of June 21 I notice, in connection with a description of the Artistic enameled ranges, the following as a new process: "The method is to fuse the enamel with the steel under a very high temperature, the enamel penetrating the pores of the steel during the process and appearing on both sides" (I presume, of the metal).

Is this to be taken seriously? Fusion with glass or enamel simply means a slight change in the composition of the casting and considerably more slag. Of the original enamel nothing will be left. Stoves and ranges are enameled in the same manner as other sheet steel or cast iron articles. Glazed terra cotta or pottery effects require, aside of the ground coat, a white under glaze and a colored transparent top or surface glaze. Majolica enamels are applied in the same manner or for small castings can be directly sifted over the red hot metal, not requiring a second fire. For decorators' work in soft colors the specially prepared enamel paint is ground with gum and water, or some vegetable oil, and applied with a pencil like oil paint.

TRADE REPORT.

MARKET SUMMARY.

Pig Tin is dull and 1c. a lb. lower in price.
Copper is dull and unchanged.
Pig Lead is quiet and steady.
Spelter is very scarce and $\frac{1}{2}$ c. a lb. higher for small spot lots.
Antimony is quiet and unchanged.
Nickel is in good demand and without change in price.
Aluminum is firm and in good demand.
Tin Plates are quiet, with prices unchanged.
Black Sheets are firm, with large demand for Heavy Sheets.
Galvanized Sheets are rather dull and not so firm.
Scrap Iron is fairly active and firm.
Scrap Brass and Copper are dull and weak.
Scrap Zinc is $\frac{1}{8}$ c. a lb. higher.
Foundry Iron is very scarce and prices nominal.
Sheet Copper is in good demand and firm in price.
Sheet Zinc has not changed; demand is moderately active.
Hardware prices are strong in all lines, with advancing tendency in same.
Cast Iron Soil Pipe and Fittings were advanced 5 per cent. on July 1.
Malleable Iron Fittings have been advanced 10 per cent. from July 1.
Cast Iron Sinks, &c., are higher, former prices having been withdrawn by manufacturers.
Builders' Ranges have been advanced 5 per cent.
Solder has declined $\frac{1}{2}$ c. a lb.
Sash Weights have been advanced in price.
Tinware, in some of the leading lines, has been reduced 5 to 10 per cent. in price.
Lamp Wicks are quoted on uniform discount list.
Wire Nails are in good demand and prices firm.
Cut Nail prices have been reaffirmed for July; demand is lessening.
Window Glass is likely to advance in price.
White Lead is firm in price and rather quiet.
Linseed Oil is about $\frac{1}{2}$ c. a gallon higher.
Spirits Turpentine has declined 2c. a gallon, and is dull.
Scrap Rubber is dull and weak.

METAL MARKET.

NEW YORK, July 3, 1902.

Pig Tin.—There has been a steady decline in the price of Pig Tin during the week, owing to lower quotations from London and the East, together with heavy arrivals. The monthly statistics published on July 1, indicating heavy shipments from the Straits, tended to stimulate the downward movement of prices. Shipments from the Straits in the month of June were especially heavy, being 640 tons greater than in the same month of last year. The market closed weak and dull with very little business doing. Jobbers' prices rule about 1c. a lb. lower than those of a week ago, quotations on small lots of Straits Pig being $28\frac{3}{4}$ c. to $29\frac{1}{2}$ c. per lb. The monthly statistics published by the New York Metal Exchange show that on June 30 the visible supply of Tin was 1131 tons greater than at the same time last year. The statistics are as follows:

	Tons.
Total visible supply June 30, 1902.....	15,897
Against visible supply May 31, 1902.....	17,018
Against visible supply June 30, 1901.....	14,766

Charles S. Trench & Co., New York, publish the following American statistics of Pig Tin, under date of July 2, 1902:

	Tons.
Estimated stocks on spot, New York, Philadelphia and Boston, June 1, 1902.....	1,791

Actual arrivals during June, New York, Philadelphia and Boston, June 1, 1902..... 3,744

Total 5,535
 Estimated consumption during June..... 3,300

Estimated stocks on spot, New York, Philadelphia and Boston, July 1, 1902..... 2,235

Actual afloat from East Indies, shipments to July 1..... 3,103

Actual afloat from England and Holland, shipments to July 1..... 170

"Acara," ashore at Jones' Beach..... 90

Total visible supply, July 1, 1902..... 5,598

As against visible supply June 1, 1902..... 5,328

July 2, 1902, spot New York price Straits, $27\frac{3}{4}$ c.

June 2, 1902, spot New York price Straits, $30\frac{1}{2}$ c.

Copper.—The Copper market remains weak and dull, with prices throughout the week in buyers' favor. A slight attempt was made early in the week to start an upward movement, but before it was well under way the London market experienced a sharp decline, which checked the rise here. Buying is of very limited proportions and confined mainly to purchases for supply of immediate needs. Jobbers quote Lake Ingot in small lots at about 13c. per lb., and Casting Copper at $12\frac{3}{4}$ c. The total exportation for the month of June amounted to 12,560 tons, making the total exports since January 1, 93,943 tons, as against 49,325 tons of last year.

Sheet Copper.—The demand for Sheet Copper is referred to as of satisfactory proportions, and the volume of inquiry indicates a steady consumption of this material in the coming months. Prices continue firm on the basis of 18c. per lb. for Sheet Copper from store.

Pig Lead.—This metal is without change, the market being quiet and uninteresting, so far as actual transactions are concerned. The tone, however, continues steady and firm. American Pig in small lots is quoted at 4.45c. to $4\frac{1}{2}$ c. per lb. St. Louis advices indicate dullness as the ruling feature in the Pig Lead market at that point, with little or no fluctuation in prices.

Spelter.—The market for Spelter is remarkably firm, and prices are going right on up. There is considerable belief that the market is being manipulated by large New York interests. It is said that up to a certain point the recent advance was quite natural and looked for, but that beyond that figure the higher prices were induced by manipulation. Spot Spelter is exceedingly scarce, and in small lots rules about $\frac{1}{2}$ c. higher than last week, jobbers quoting the metal at $5\frac{3}{4}$ c. to 6c. per lb. for good Western brands. The demand, in view of the rapid advance in prices, is naturally very light. Moreover, the shutting down of plants for repairs has tended to restrict the demand. St. Louis advices report that a more active set of conditions has dominated the market for Spelter during the week, and transactions have been of considerable size, with prices extremely strong.

Sheet Zinc.—The demand for Sheet Zinc is of the average proportions, and prices are unchanged at $6\frac{3}{4}$ c. per lb. for 600-lb. cask lots, and $7\frac{1}{4}$ c. to $7\frac{1}{2}$ c. for smaller quantities.

Antimony.—This metal is firm and unchanged. Cookson's is quoted in small lots at $10\frac{1}{2}$ c. to 11c. per lb., Hallett's at $8\frac{7}{8}$ c. to 9c., and U. S. at $8\frac{1}{2}$ c. to $8\frac{7}{8}$ c.

Nickel.—There is no change in the market for this metal. Small lots are quoted at about 55c. per lb.

Aluminum.—The demand continues active, and prices are without change. Small lots of No. 1 Ingot, guaranteed 99 per cent. pure, are quoted at 37c. per lb., and 100-lb. lots at 35c.

Tin Plates.—The market for Tin Plates is absolutely without change. Business is dull in both wholesale and retail way, and it is not expected that any change in the direction of renewed activity will be seen for the next month or so. Prices, meanwhile, are steady and unchanged. American Bessemer Coke Plates I C, 14 x 20, in moderate sized lots, delivered at New York or corresponding points, are quoted by jobbers at \$4.75 to \$4.90 per box.

Sheets.—A heavy demand for the heavier gauges of

Black Sheets is reported, but the demand for the lighter gauges is somewhat quiet. Some good sized orders are said to have been placed for long deliveries, but the makers generally are not encouraging business of that kind at the prices buyers are willing to pay. Quite a number of the Sheet mills throughout the country are now closed for repairs and stock taking. Galvanized Sheets are somewhat dull. Jobbers quote No. 27 one pass cold rolled Soft Steel Sheets at 3.75c. to 3.80c., and No. 24 Galvanized at 4c. to 4.20c.

Chicago advices are as follows: With the exception of Heavy Sheets, which are firm, the market has been unsettled and prices somewhat irregular, Galvanized Sheets being especially weak. No. 27 Black Sheets in small lots from store rule at 3.45c. to 3.55c. Galvanized Sheets in small lots from store are held at 4.70c. to 4.75c. for No. 27.

Old Metals.—Scrap Iron prices are firm, although the demand is not quite as urgent as of late. Old Brass and Copper are dull and weak. Scrap Zinc is $\frac{1}{4}$ c. higher, owing to scarcity of new Spelter. Dealers are paying about the following rates for moderate sized lots, delivered at New York or corresponding points:

Heavy Copper.....	per lb.	10 c.
Light and Tinned Copper.....	per lb.	9 c.
Heavy Brass.....	per lb.	8 c.
Light Brass.....	per lb.	6 $\frac{1}{2}$ c.
Lead.....	per lb.	3 $\frac{3}{4}$ c.
Tea Lead.....	per lb.	3 c.
Zinc.....	per lb.	3 $\frac{1}{4}$ c.
Pure Aluminum Sheet.....	per lb.	22 c.
Cast Aluminum.....	per lb.	17 c.
No. 1 Pewter.....	per lb.	18 c.
No. 2 Pewter.....	per lb.	9 c.
Tin Plate Scrap, per gross ton.....		to \$5.00
Wrought Iron Scrap, per gross ton.....		\$13.00 to 13.50
Heavy Cast Scrap, per gross ton.....		12.00 to 12.50
Stove Plate Scrap, per gross ton.....		8.50 to 9.00
Burnt Iron, per gross ton.....		7.00 to 7.25

THE PIG IRON MARKET.

NEW YORK.—The situation is becoming more and more serious, with the strikes affecting many Eastern furnaces, some plants in Virginia and in the Ohio Valley, and now, too, in the Birmingham district. Consumers, the majority of whom are covered to the end of the year, are not getting the Pig Iron contracted for, and are forced to piece out as well as they can. In that way a good deal of Scotch, English and German Pig Iron is being purchased, and a good deal of it is being offered. For Scotch and English Foundry Irons, mixed, No. 1 and No. 3, \$20.50 to \$21.50 is asked, while for Scotch makers' brands, No. 1, \$22 to \$22.50 is paid. So far as we can learn very little is doing in this section for delivery in 1903, buyers preferring to await developments. It is difficult to quote American Pig Irons for nearby delivery, and the following figures are nominal: Northern Iron, at tidewater, No. 1 X, \$23.50 to \$25; No. 2 X, \$22.75 to \$23.50; No. 2 Plain, \$22.25 to \$22.50. Tennessee and Alabama brands are quoted as follows: No. 1 Foundry, \$22.50 to \$23.50; No. 2 Foundry, \$21.75 to \$22.50; No. 3 Foundry, \$21.25 to \$21.75.

CHICAGO.—Sales aggregating about 40,000 tons have been made of Northern Iron on the basis of \$21 for No. 2 Foundry, Chicago, for delivery during the first six months of next year. There has also been a considerable tonnage placed for deliveries beginning in November of this year and extending into the first four months of next year. But while the volume of business has been mainly in Northern Iron there have been further transactions in Southern Iron on the basis of \$17 for No. 2, Birmingham. The market for Southern Iron seems to be more settled, there being a tacit understanding apparently among Southern furnaces, but the report is current that a meeting is to be held to formally adopt \$17 as the basis of next year's delivery—that is, for the first half of the year. Thus far prices have ranged all the way from \$16.50 to \$18, transactions being actually booked at these prices. These fluctuations have crystallized into a steady market on the basis above quoted—that is, \$17 for No. 2. The general character of the market as far as spot and this year's delivery is concerned has changed but little. By some hook or crook dealers have been able to secure occasional lots ranging from carloads to 50 tons for quick shipment. This has

been especially true of Southern Iron, which has sold mainly at \$23.15 for No. 1, and \$22.65 for No. 2, delivery Chicago, but there have continued to be occasional transactions where excessive prices have been obtained.

PHILADELPHIA.—At no time within the past 25 years has it been as difficult to quote prices as it is to-day, and at no time has it been as difficult to guess what they will be two or three months hence as it is at the present time. Famine conditions are already in force, but if appearances are to be relied upon we shall be worse off later on. Fuel is getting scarcer and dearer every day, and now there are complaints of a car shortage, so that whichever way one looks prospects are not favorable for increased supplies or for lower prices. It is hardly possible to quote very close figures, because a sale at a price one day may be superseded by another a little later at an entirely different figure, so that either of the sellers looking at the other's quotations may say that the price is not correct, while, as a matter of fact, both represent actual transactions. A case in point is that No. 2 X Foundry Iron sold a few days ago at \$21.50 to \$22 for next year's deliveries, while to-day \$22.50 to \$23 is as well as could be done, with some sales at a medium figure. What it will be next week is hard to say. Fuel is practicably unobtainable, although pretty nearly double prices are paid for prompt shipments. To add to the complications, it is said that the railways are preparing for an advance in freights, so that the chances for lower costs for Pig Iron are simply out of sight. Foreign Iron is readily taken when it can be had with reasonable promptness, but there is still a strong indisposition to make forward contracts for Foundry grades. A fair average of prices for deliveries in buyers' yards or nearby points would be about as follows for deliveries during the last quarter of the year, July, August and September deliveries being anywhere from \$1 to \$2 higher:

No. 1 X Foundry.....	\$23.50 to \$24.50
No. 2 X Foundry.....	22.75 to 23.50
No. 2 Plain.....	22.25 to 22.50

CHICAGO REPORT.

Scrap Iron and Steel.—The closing of a majority of the mills in this section reduces the outlet for Scrap at the present time, but the supply is not large, and as some of the mills will resume within two weeks there is but little change in the temper of the market and prices remain steady, as previously quoted. Dealers buy offerings in carload lots, Chicago delivery, as follows:

	Per net ton.
Country Wrought Scrap.....	\$14.00 to \$14.50
Machinery Cast.....	to 13.50
Malleable Cast.....	12.00 to 13.00
Stove Plate (free from burnt).....	to 9.50
Burnt Iron and Grate Bars.....	8.00 to 9.00
Sheet Iron and Hoops.....	8.00 to 9.00
Plow Steel.....	12.00 to 13.00
Breaking Stock.....	to 11.00
Old Boilers—whole (Iron).....	9.50 to 10.00
Old Boilers (Iron) cut in single Sheets and Rings.....	12.00 to 12.50
Old Gas Pipes and Boiler Tubes.....	12.00 to 12.50
Cast Borings.....	8.50 to 9.00
Turnings.....	12.00 to 12.50
Horseshoes.....	14.00 to 14.50

Old Metals.—The Scrap Copper market has been again weak in sympathy with Ingot Copper in primary markets. Prices have been somewhat easier and Red Brass Borings have declined $\frac{1}{4}$ c. Pewter, too, has been more freely offered, and No. 1 has declined 1c.; on the other hand, Zinc has developed a stronger tone and prices have advanced $\frac{1}{4}$ c. per lb. The following prices are being paid by dealers in this market:

	Per lb.
Copper Wire and Heavy.....	10 $\frac{3}{4}$ c.
Copper Bottoms.....	9 $\frac{3}{4}$ c.
Copper Clips.....	10 $\frac{1}{2}$ c.
Red Brass.....	11 c.
Yellow Brass.....	8 $\frac{1}{4}$ c.
Red Brass Borings.....	9 $\frac{3}{4}$ c.
Yellow Brass Borings.....	7 $\frac{1}{4}$ c.
Light Brass.....	6 $\frac{3}{4}$ c.
Pipe Lead.....	3.70c.
Tea Lead.....	3.35c.
Zinc.....	3 $\frac{1}{4}$ c.
Tin Foll.....	22 c.
Pewter, No. 1.....	18 c.
Pewter, No. 2.....	11 c.
Aluminum.....	20 c.

Old Rubber.—There has been a fair demand, and with offerings only moderate the market has continued

to develop firmer feeling. The price of Air Brake Hose has advanced \$3 per ton. The following are the prices paid by dealers in this market:

	Per net ton.	Per lb.
Garden Hose.....	\$25.00	.....
Air Brake Hose.....	45.00	.....
Rubber Shoes.....	.....	1 c.
Rubber Car Springs.....	.....	5 c.
Inside Bicycle Tubing.....	.....	22 c.
Outside Tubing.....	.....	6 c.
Black Rubber.....	.....	4 c.
White Rubber.....	.....	8½ c.

Rags.—The market is slow and easy, with free offerings and prices are barely sustained. Dealers buy desirable offerings at 65c. to 75c. per 100 lbs., Chicago delivery.

Anthracite Coal.—Beyond the reduction of discount of 10c. per ton, the market has changed but little during the week and the demand has been unusually light. Supplies are being gradually reduced, however, and under the circumstances the market gradually hardens. There continues to be a fair movement of contracts and the prices current are as follows, subject to a discount of 20c. per ton for shipments made during the month of July:

	Grate.	Egg and Stove.
Chicago	\$5.75	\$6.00
Milwaukee, Wis.....	5.75	6.00
St. Louis.....	6.20	6.45
Kansas City, Mo.....	8.25	8.50

THE HARDWARE TRADE.

The last half of the year opens with a very general feeling of confidence that the remaining six months will be characterized by excellent business. All classes in the trade have gratifying reports to make in regard to results of the past six months, which have been undoubtedly a period of exceptional prosperity both in the making and marketing of goods, as well as throughout the country at large. There is general agreement in the feeling that there is still a large volume of business awaiting the trade during the remainder of the year. The strength of the iron market gives firmness to prices, but the heavy demands upon manufacturers have perhaps nearly as much influence in this direction. At the present time there is difficulty in obtaining goods in many lines which is without parallel in recent years. Prominent manufacturers who have usually been in a position to fill orders promptly are months behind. Not only in heavy goods, but in many other lines, such as Shovels, Tools, Builders' Hardware, miscellaneous specialties and various kinds of Shelf Hardware, is there delay in executing orders. With the excellent promise for business in the fall there is some prospect that in many lines it will be a question as to obtaining goods rather than of prices, and merchants who take this view are covering their requirements liberally. In this condition of things prices are naturally steady, and apart from the increased cost of goods on account of the prices of the raw material and the higher wages which are ruling, manufacturers are indisposed to make concessions. In a few lines, however, the effect of competition is developing slightly lower prices, but on the whole the situation is very satisfactory.

NOTES ON PRICES.

Cast Iron Soil Pipe and Fittings.—Under date of July 1 the manufacturers of Cast Iron Soil Pipe and Fittings announced new prices to the jobbing trade. They also agreed between themselves that hereafter all sales at jobbers' prices are to be confined to the "blue list" of jobbers issued by the National Confederated Supply Associations, and that all sales to other persons or firms must be at prices adopted by the Association of Manufacturers. The new prices adopted at the Niagara Falls meeting show an advance of 5 per cent. over the prices in effect since April 1 last. The prices to the plumbing trade in the territory of Greater New York and the surrounding diistrict remain unchanged. Up to the present writing none of the jobbing houses have advanced their selling price. This, we believe, is due to the fact that business in the metropolitan district is exceedingly dull,

and the demand for Soil Pipe and Fittings in particular does not warrant any change. It is also said that the price of Cast Iron Soil Pipe and Fittings is so near to the price of Wrought Iron Pipe that with the difference in the labor it might be an inducement on the part of the builder to use Wrought Iron Pipe for drainage purposes. Terms and freight allowances remain unchanged.

Malleable Iron Fittings.—Under date of July 1 the manufacturers of Malleable Iron Fittings withdrew prices and announced that an advance of 10 per cent. had taken place on that date. Recent changes in the wages of the workmen and a continued advance in the price of raw material are responsible for the change. It is said that all the principal manufacturers of Malleable Fittings are simply overwhelmed with orders. One of the largest of the Pennsylvania manufacturers is still several months behind on last year's business. Orders are coming in to the manufacturers at such a rate that they are almost impelled to put prices at a prohibitory point in order to relieve themselves of the present tax on their capacity.

Cast Iron Sinks.—Owing to the increased cost of all raw materials that enter into the manufacture of Cast Iron Sinks, Sink Backs, Legs, Cesspools and goods of a similar character the manufacturers say that they are forced to withdraw all prices. New prices will be furnished only on application, specifications to accompany the application for new prices. All quotations will be made for prompt acceptance and immediate shipment.

Solder.—The decline this week in the price of Pig Tin has been followed by a reduction of about ½ cent a pound in the price of Solder. Half and Half, Guaranteed, is quoted in small lots at 19½ to 20 cents, and No. 1 at 17 to 18½ cents.

Bifurcated and Tubular Rivets.—The manufacturers of Bifurcated and Tubular Rivets announce a reduction in price of these goods, which is understood to be owing to the development of competition.

Sash Weights.—Going into effect July 1 the price of Sash Weights for the Eastern district is made \$22.50 to \$23 per ton, f.o.b. foundry. It is not unlikely that a similar advance will be made in the West, but we are not in receipt of advices in regard to it.

Tinware.—The manufacturers of Tinned, Stamped, Pieced and Japanned Ware have readjusted some of their prices on a comparatively few lines of leading goods. The changes are principally in the line of reductions, although there are a few increases in price. The reductions will vary between 5 and 10 per cent., and are mainly on account of some increased competition among smaller manufacturers of competitive goods. It is in no sense a general revision of prices, although the goods affected are thoroughly staple.

Lamp Wicks.—Manufacturers of Lamp Wicks have adopted uniform discounts on Regular, Special and Stove and Heater Wicks. The list on Regular Wicks is known as List No. 1; on Special Wicks, as List No. 2, and on Stove and Heater Wicks, as List No. 3. Discounts are as follows:

	Discount.
List No. 1.....	70 and 5 %
Lists Nos. 2 and 3.....	10 and 5 %

List No. 1 is as follows:

	Per gross.
No. O, or E, ½ inch wide.....	\$0.60
No. 1, or A, ⅝ inch wide.....	.75
No. 2, or B, 1 inch wide.....	1.10
No. 3, or D, 1½ inches wide.....	1.75
Brilliant, Argand and Crystal Light.....	2.00
Deitz, ¾ inch wide.....	.90
B. Wick, Double Thick.....	2.50
Above Wick in 32-yard pieces at same prices.	
Pett Circular.....	.60
No. 3, Moehring, 2¾ inches wide.....	3.00
Mann's Monarch.....	2.50
D, Dual, 10 inches long.....	3.00
Duplex and Oxford, 10 inches long.....	3.00
Wide-Awake and Nutmeg.....	.50
Tom Thumb, Round and Flat.....	.30
Nos. 1 and 2, German Student.....	1.10
Little Banner, Favorite and Evening Star.....	.30
Round Fluid, per dozen.....	.60 cents.

List No. 2 pertains to such Wicks as are used on Roch-

ester, Miller and other lamps of that type. List No. 3 relates to Flat and Round, Stove and Heater Wicks. As all manufacturers do not make Wicks for the same lamps, stoves and heaters, Lists Nos. 2 and 3 are not altogether uniform, but all Nos. 2 and 3 lists are subject to the same discounts as given above.

Wire Nails.—The demand for small lots of Wire Nails from store is good and prices are unchanged at \$2.30 per keg. The mills are closing for repairs, thus reducing the output of Nails.

Cut Nails.—Prices of Cut Nails ruling in June were reaffirmed for the month of July by the Cut Nail Association at a recent meeting. The material falling off of demand at this season will afford some relief from the delays in obtaining both Steel and Iron Nails. Cut Nails are in fair demand in the New York market at unchanged prices. Small lots from store are selling at \$2.30 per keg.

Glass.—All Window Glass factories are now reported as being out of operation. There is said to be considerably less Glass in manufacturers' and jobbers' hands than there usually is at this season, so as stocks become depleted in assortment higher prices may be expected for popular sizes. The Jobbers' Association quotations for Single and Double Strength Glass from store is 88 and 5 per cent. discount.

White Lead.—The demand for White Lead in Oil shows a falling off, as the trade are pretty well supplied. Manufacturers are now busy preparing for trade in the fall. Prices are unchanged. Small lots from store are quoted at 6½ to 6¾ cents per pound.

Linseed Oil.—Demand for Linseed Oil for immediate delivery is of a hand to mouth character. There is also little interest taken in placing contracts for large lots of Oil for future delivery. Prices are firm, and higher. City Raw, in small lots, is quoted at 68 to 68½ cents per gallon.

Spirits Turpentine.—A falling off in the price of Turpentine during the middle of the week revived interest in the market, which had been dull at previous figures. Buying was in more liberal quantities, at the lower figures. Jobbers' prices for small lots of Turpentine, from store, are 48 to 48½ cents per gallon, or about 2 cents lower than last week's figures.

Old Rubber.—The market is dull and rather weak. Dealers in New York and vicinity are paying about the following figures:

Car Springs, ton lots, per lb.....5c.
Rubber Shoes, less than carloads, per lb.....6¾ to 7c.
White Wringer Rolls, per lb.....7c.
Inside Bicycle Tubing, per lb.....21½c.
Outside Tubing, per lb.....6c.

TRADE NOTES.

THE BENEDICT & BURNHAM BRASS & COPPER COMPANY, Chicago, have increased their capital stock from \$100,000 to \$150,000.

THE HYLE BROTHERS STEEL COMPANY, established at Syracuse, N. Y., last year, will be enlarged and the capital increased to \$3,000,000. The company are contemplating the erection of a plant to employ 500 men in the manufacture of Die Stocks, Pipe Cutters, Tube Expanders and other hard steel tools.

The employees of the Kilbourne & Jacobs Mfg. Company, Columbus, Ohio, have organized a St. Louis exposition club, the object of which is to provide a fund for defraying their expenses at the St. Louis World's Fair in 1904. Each member contributes \$1 per week to the fund.

THE AERMOTOR COMPANY, Chicago, Ill., report business better than ever before. They find themselves hard at work to keep within sight of orders, although they are running their plant until 9 o'clock at night.

THE CENTRAL CITY BRASS MFG. COMPANY, Syracuse, N. Y., will enlarge the capacity of their foundry.

THE PENNSYLVANIA FIRE PROOFING COMPANY of St. Mary's, Pa., have been chartered with a capital of \$150,000. E. D. Carter of Erie is treasurer.

THE CARBORUNDUM COMPANY of Niagara Falls, N. Y.,

are about to build a large addition to their crushing and grinding plant. This addition will be in the form of a three-story brick building, 50 x 225 feet. During the year other additions and improvements will be made.

THE STAR ALUMINUM COMPANY of Doylestown, Ohio, have increased their capital stock from \$10,000 to \$15,000 and will make a number of improvements to their plant.

THE YOUNGSTOWN BRONZE COMPANY, recently organized at Youngstown, Ohio, will manufacture Bronze, Brass and small Gray Iron Castings. Officers have been elected as follows: Graut S. Jones, president; J. W. Long, vice-president and superintendent, and W. H. McMillin, secretary and treasurer.

An agreement has been reached between the foundrymen and the molders of Pittsburgh. An advance of 10 per cent. in wages was asked by the latter, but after two days' conference an advance of 20 cents a day was agreed upon, to be in force for one year from July 1, 1902. The agreement involves all the leading foundry concerns in Pittsburgh.

CONTENTS.

Editorials—	Page
The Gas and Oil Stove Trade.....	31
Production of Pig Iron by Grades.....	31
The Rights of Employers.....	31
Municipal Ownership	32
Some Results in England.....	32
Exports of Manufactures.....	32
Business Failures for Six Months	32
Range Prices Advanced.....	33
The Thompson Oil Burner. Illustrated.....	33
Furnace Rules and Calculations.—II.....	34
The Graf Acetylene Gas Range. Illustrated	34
The Paxson-Warren Sand Blast System. Illustrated. .	35
Consolidation vs. Survival of the Fittest.....	36
The Late Edward N. Currier.....	36
Wood Furnaces.....	36
Odd Plates	37
A Rack for Washers. Illustrated.....	37
The Automatic Oiler. Illustrated.....	37
The T. & B. Fruit Jar Holder. Illustrated.....	38
Never-Rust Compound.....	38
Lisk's New Oval Dinner Pall. Illustrated.....	38
U. T. Hungerford Brass & Copper Company	38
The Herrick O. K. Wire Hoops. Illustrated.....	39
Stove and Hardware Dealers.....	39
Prof. J. B. Johnson.....	39
Substitute for Linseed Oil.....	39
Patterns for Elbow Mitering Against Soffit of Winding Chute. Illustrated.....	40
The Origin of "Pi.".....	43
A Gang Slitting Machine with Flattening Rolls and Winder. Illustrated.....	43
The Tin Plate Wage Scale.....	44
Metal Shingles and Tiles.....	44
The Totten Aluminum Soldering Compound.....	44
The Everlasting Chimney Cap. Illustrated.....	44
Twentieth Century Down Draft Fire Pot. Illustrated.....	45
The Syphon Ventilator. Illustrated.....	45
Flashings.....	45
Expansion Bolts.....	46
Cost of a Central Acetylene Gas Installation.....	46
An Important Trade Notice.....	47
Will Heating Goods Advance?	47
New York City Notes.....	47
The Speakman Ventilated Urinals.....	47
Heating and Ventilating a Residence with Steam. Illustrated.....	48
The Pittsburgh Valve & Fittings Company.....	51
Wash Down Siphon Closets. Illustrated.....	52
The Late Samuel L. Malcolms.....	52
International Steam and Hot Water Boilers.....	52
Heating and Plumbing Notes.....	53
New Firms and Changes.....	54
Sun Ray Boilers and Roman Radiators.....	55
Penn Radiator Catalogue.....	55
Applications for Space at St. Louis World's Fair, 1904.....	55
The Letter Box—	
Patterns for Leader Head. Illustrated.....	56
Who Makes Britannia Metal Mouthpieces for Bugles?.....	56
Artistic Enameled Ranges.....	56
Trade Report—	
Market Summary.....	57
Metal Market.....	57
The Pig Iron Market.....	58
Chicago Report.....	58
The Hardware Trade.....	59
Notes on Prices.....	59
Trade Notes.....	60
Metal and Miscellaneous Prices.....	61
Labor Exchange—	
Help and Situations Wanted.....	63

ALPHABETICAL LIST OF ADVERTISERS.

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Asphalt Ready Roofing Co... 73	Danzer Metal Works .. 76	Howes, S. M. Co..... 25	National Pipe Bending Co.... 21	Sommer's, John Son..... 1
Auer Register Co..... 10	Davis Heater Co..... 14	Howson & Howson..... 66	New York Iron Roofing & Corrugating Co..... 70	Special Notices..... 66
Auld & Conger Co..... 69	Day Metallic Mfg. Co..... 27	Hnbell, Harvey..... 25	Niagara Machine & Tool Wks. 77	Sperry, D. R. & Co..... 67
Barstow Stove Co..... 80	Dighton Furnace Co..... 15	Independent Register Co.... 22	Noppel Pump Co..... 26	Stamford Foundry Co..... 21
Beckwith, P. D., Est. of..... 2	Dixon, Jos. Crucible Co..... 21	International Heater Co..... 3	O'Halloron & Jacobs..... 69	Standard Lighting Co..... 19
Berger Bros. Co..... 70	Double Truss Cornice Brake Co..... 76	Iwan Bros..... 68	Ohio Mica Co..... 22	Steel & Iron Aluminum Coat-Ing Co..... 71
Berger Mfg. Co..... 74	Drake, W. H..... 22	Janney, Steinmetz & Co..... 75	Ohl, Geo. A. & Co..... 78	Stiles & Parker Press Co.... 73
Bergstrom Bros. & Co..... 11	Dronve, G. Co..... 76	Jenkins Bros..... 1	Osborn, J. M. & L. A..... 73	Stocking, E. B..... 66
Bertsch & Co..... 78	Edwards, J. H..... 28	Johnson, E. J. & Co..... 69	Ostrander, W. R. & Co..... 69	Stolz, Frank D..... 19
Bishop, G. E..... 77	Edwards Mfg. Co..... 74	Keene, Geo. C. & Co..... 79	Patric Furnace Co..... 18	Stowell Mfg. Co..... 76
Bliss, E. W. Co..... 78	Ellers, J. H. & Co..... 75	Kelsey Heating Co..... 30	Peck-Hammond Co..... 21	Taylor Co., N. & G..... 80
Blodgett, G. S. Co..... 22	Energy Elevator Co..... 67	Kemp, C. M. Mfg. Co..... 23	Peck-Stow & Wilcox Co..... 77	Thatcher Furnace Co..... 14
Boss Washing Machine Co... 67	Excelsior Steel Furnace Co.. 17	Kewanee Boiler Co..... 11	Peck-Williamson Co..... 16	Troy Nickel Works..... 24
Boynton Furnace Co..... 10	Fenn, Geo. E..... 68	Kieley & Mueller..... 1	Perkins, J. L. & Co..... 68	Tucker & Dorsey Mfg. Co.... 25
Brand Stove Co..... 13	Floyd, Wells & Co..... 13	Koven, L. O. & Bro..... 28	Phila. Machine Tool Co..... 77	U. S. Register Co., Ltd..... 21
Bray, J. & Co..... 69	Follanshee Bros. Co..... 1	Kramer Bros..... 21	Pierce, Butler & Pierce Mfg. Co..... 19	Valentine, M. D. & Bro. Co.. 23
Bridgeport Crucible Co..... 23	Forest City Fdry. & Mfg. Co.. 19	Lawless, John H..... 28	Pittsburgh Stove & Range Co. 6	Vedder Pattern Works..... 24
Brien Heater Co..... 19	Foster, F. W. Mfg. Co..... 23	Lawrence-Letts Elbow Co... 24	Pocock, Oliver..... 79	Vogel, William & Bros..... 68
Bruce & Cook..... 73&30	Frاند, Martin J. & Co..... 76	Lennox Manufacturing Co... 22	Preshrey Stove Lining Co.... 23	Walker & Pratt Mfg. Co..... 15
Buffalo Forge Co..... 63	Friedley & Voshardt..... 74	McClure & Co..... 80	Rathbone, Sard & Co..... 4	Walworth Mfg. Co..... 1
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Carroll, J. B..... 23	Galesburg Cornice Works... 70	March-Brownhack Stove Co.. 15	Robinson, J. M. & Co..... 79	Wheeler, W. A..... 79
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Chicago Furnace Supply Co.. 18	Globe Ventilator Co..... 68	Merchant & Co..... 69	St. Louis Enameling Co..... 67	Wolff, L. Mfg. Co..... 23
Cincinnati Stamping Co..... 73	Gohelle Pattern Co..... 25	Metropolis Sheet Metals & Stove Repairing Co..... 19	Salem Nail Co..... 69	Wood, Alan Co..... 73
Clark, Henry N. Co..... 17	Gordon, W. J..... 79	Meurer Bros. Co..... 71	Bannders', D. Sons..... 27	Young, Jos. H..... 23
Clark Novelty Co..... 67		Meyer, F. & Bro. Co..... 18		
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Cincinnati Stamping Co., Cincinnati, O.
Cortright Metal Roofing Co., Philadelphia, Pa.
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Shot.

Colwell Lead Co., 63 Centre St., N. Y.

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Chattanooga Steel Roofing Co., Chattanooga, Tenn.
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Mullins, W. H., Salem, O.

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Galt, Jno. & Sons, 253 Broadway, N. Y.
Salem Nail Co., 279 Pearl St., N. Y.

Snow Guards.

Clason Arch. Metal Works, Providence, R. I.

Solder.

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Valentine, M. D. & Bro. Co., Woodbridge, N. J.
Williams Stove Lining Co., Taunton, Mass.

Stove and Metal Polish.

Hoffman, Geo. W., Indianapolis, Ind.
Rutland Fire Clay Co., Rutland, Vt.

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Gobelle Pattern Co., Cleveland, O.
Milwaukee Pattern Works, Milwaukee, Wis.
Vedder Pattern Works, Troy, N. Y.

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Clark, Henry N. Co., Boston, Mass.
Howes, S. M. Co., Boston, Mass.
Marcy Stove Repair Co., 74 Beekman St., N. Y.
Metropolis Sheet Metals & Stove Repairing Co., Newark, N. J.
Troy Nickel Works, Troy, N. Y.

Stove Trimmings, &c.

Shields, W. H. & Co., Troy, N. Y.
Troy Nickel Works, Troy, N. Y.

Stove Trucks.

Arcade Mfg. Co., Freeport, Ill.
Howes, S. M. Co., Boston, Mass.
Tucker & Dorsey Mfg. Co., Indianapolis, Ind.

Stoves and Ranges.

Barstow Stove Co., Providence, R. I.
Beckwith, P. D., Est. of, Dowagiac, Mich.

Bergstrom Bros. & Co., Neenah, Wis.
Boydton Furnace Co., 207 Water Street, New York.
Brand stove Co., Milwaukee, Wis.
Champion Steel Range Co., Cleveland, Ohio.

Dighton Furnace Co., Taunton, Mass.
Floyd, Wells & Co., Roversford, Pa.
Fuller & Warren Co., Troy, N. Y.
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Ringen Stove Co., St. Louis, Mo.

Schneider & Trenkamp Co., Cleveland, O.
Shepard, Isaac A. & Co., Phila., Pa.
Smith & Anthony Co., Boston, Mass.
Somerset Stove Foundry Co., Somerset, Mass.

Stamford Foundry Co., Stamford, Ct.
Thatcher Furnace Co., 210 Water St., N. Y.

Walker & Pratt Mfg. Co., Boston, Mass.
Weir Stove Co., Taunton, Mass.
White, Warner Co., Taunton, Mass.
Willard, Wm. G., St. Louis, Mo.

Stoves and Ranges, Gas.

Dangler Stove & Mfg. Co., Cleveland, Ohio.
Dighton Furnace Co., Taunton, Mass.
Howes, S. M. Co., Boston, Mass.
Metropolis Sheet Metals & Stove Repairing Co., Newark, N. J.
Ringen Stove Co., St. Louis, Mo.
Standard Lighting Co., Cleveland, O.

Stoves and Ranges, Oil, Vapor and Gasoline.

Dangler Stove & Mfg. Co., Cleveland, Ohio.
Rathbone, Sard & Co., Albany, N. Y.
Ringen Stove Co., St. Louis, Mo.
Schneider & Trenkamp Co., Cleveland, O.
Standard Lighting Co., Cleveland, O.

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Edwards, J. H., 59 Park Place, N. Y.

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American Tin Plate Co., New York.
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Bertsch & Co., Cambridge City, Ind.
Bliss, E. W. Co., Brooklyn, N. Y.
Bruce & Cook, 186 to 190 Water St., New York.

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Keene, Geo. C. & Co., Cincinnati, O.
Meurer Bros. Co., Brooklyn, N. Y.
Nagara Machine & Tool Wks., Buffalo, N. Y.

Obl. Geo. A. & Co., Newark, N. J.
Peck, Stow & Wilcox Co., 27 Murray St., New York.
Stiles & Parker Press Co., Brooklyn, N. Y.

Welss, H. & Co., 20 Cliff St., N. Y.

Tinners' Trimmings.

Vogel, Wm. & Bros., Brooklyn, N. Y.

Tin Plate.

American Tin Plate Co., New York.

Bruce & Cook, 186 to 190 Water St., New York.
Coe, Jas. A. & Co., Newark, N. J.
Follansbee Bros. Co., Pittsburgh, Pa.
Gummey, McFarland & Co., Phila., Pa.
McClure & Co., Pittsburgh, Pa.
Merchant & Co., Philadelphia, Pa.
Meurer Bros. Co., Brooklyn, N. Y.
Osborn, J. M. & L. A., Cleveland, Ohio.
Taylor, N. & G. Co., Philadelphia, Pa.

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Robertson Mfg. Co., Buffalo, N. Y.

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Armstrong Mfg. Co., Bridgeport, Conn.
Curtis & Curtis Co., Bridgeport, Conn.
Saunders, D. Sons, Yonkers, N. Y.

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A. D. Mfg. Co., Syracuse, N. Y.
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Am. Steam Gage & Valve Mfg. Co., Boston, Mass.
Crosby Steam Gage & Valve Co., Boston, Mass.
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Iwan Bros., Streator, Ill.

Ventilators and Chimney Caps.

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Buffalo Forge Co., Buffalo, N. Y.
Fenn, Geo. E., Boston, Mass.
Globe Ventilator Co., Troy, N. Y.
Kramer Bros., Dayton, O.
Merchant & Co., Philadelphia, Pa.
Meurer Bros. Co., Brooklyn, N. Y.
Washburne, E. G. & Co., 46 Cortlandt St., New York.

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Marston, L. G. & Co., Boston, Mass.

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Boss Washing Machine Co., Cincinnati, Ohio.

Water Coolers.
National Enameling & Stamping Co., 78 Beekman St., N. Y.

Water Closets.

Adee, Fred. & Co., 90 Beekman St., N. Y.
Colwell Lead Co., 63 Centre St., N. Y.

Water Fronts.

Clark, Henry N. Co., Boston, Mass.

Water Heaters.

Davis Heater Co., Racine, Wis.
Kemp, C. M. Mfg. Co., Baltimore, Md.

Wind Gates.

Miner & Peck Mfg. Co., New Haven, Ct.

Window Frames, Metal.

Smith-Warren Co., Boston, Mass.

SEE ALPHABETICAL INDEX, PAGE 62.

THE METAL WORKER.

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Notices under this heading of reasonable length are inserted free of charge. Only those relating to employment are admitted. Write distinctly on one side of paper only, and do not use postal cards.

Original letters of reference should not be inclosed with replies to advertisements appearing in these columns as they are frequently mislaid and lost. A copy of the reference will serve the purpose.

HELP WANTED.

Good all around TINNER wanted, between 25 and 40; state reference and experience; wages 30 cents per hour; regular work. Schroeder Bros., 902 Payne avenue, St. Paul, Minn. July 5

At once, one TINSMITH and one PLUMBER, or both in one; steady job in up to date town in Western Michigan; we know the value of a good man; state experience and wages wanted. Sweet Bros., Dowagiac, Mich. July 5

First-class SHEET IRON WORKERS on blow pipe work; erecting mechanics preferred; state experience and wages expected. Dixie Mfg. Company, Greensboro, N.C. July 5

PLUMBER that understands tin work or has some knowledge of same; excellent chance for young man who has not yet finished his trade; work in the country and wages moderate. "Sanitary," Care *The Metal Worker*, New York. July 5

A first-class CORNICE and SKYLIGHT WORKER; one who can cut out, put together and erect his own work if necessary; steady work and good wages year round; nine hours. Thomas & Smith, Norfolk, Va. July 5

Near Boston, a young first-class TINSMITH, FURNACE MAN and JOBBER; steady work and reasonable wages; can learn plumbing spare time. "A. J.," care *The Metal Worker* New York. July 5

First-class ESTIMATOR on sheet metal work, cornices, &c.; one competent to assist in cutting preferred; state references and salary. J. C. McFarland & Co., Twenty-seventh street and Fifth avenue, Chicago, Ill. July 5

Two practical TINSMITHS who understand roofing, general jobbing and blower pipe work; \$2.75 per day; 8 hours. Meyer & Co., Mahoningtown, Pa. July 5

Two practical SLATE ROOFERS; men who are familiar with tin work in connection with slate roofing preferred. Meyer & Co., Mahoningtown, Pa. July 5

At once, TINSMITH who understands plumbing; steady work, good wages to satisfactory man; state wages. Freeman Bros., Ithaca, N. Y. July 5

First-class CORNICE CUTTER and BUMPER; must be sober and industrious; none but the best need apply. Hughes, 1128 North Broadway, Seattle, Wash. July 5

First-class SALESMAN; one who thoroughly understands the sheet metal business and has had experience as a salesman in Boston and vicinity; no other need apply; salary; best references required. Wheeler Corrugating Company, 132-134 Pearl street, Boston, Mass. July 5

A first-class PLUMBER, STEAM and HOT WATER FITTER; must be able to work from plans; steady employment and good wages to the right man. Write, giving references, experience and wages wanted, The Henderson & Heasley Company, Warren, Ohio. July 5

SALESMAN to handle fine line of stoves on commission in New England, also New York City and vicinity; either as a side line or whole; liberal arrangement with A1 man. "Chance," care *The Metal Worker*, New York. July 5

PLUMBERS; work all summer; no strike in town; good jobs for steady young men; state experience and wages expected; good boarding to be had at \$4.50 per week. Write at once, Geo. Whitehill, Butler, Pa. July 5

A steady, reliable TIN and SHEET METAL WORKER; must be a neat workman and know his business; state wages. G. W. Huff, Sanford, Maine. July 5

Thoroughly reliable TINNER who understands plumbing and would be capable of taking charge of country shop; owner is a mechanic but his time is taken up in the store, steady position to right man; give full particulars as to age, experience, habits, and state if married or single. Hoover Bros., Milroy, Pa. July 5

Experienced SALESMAN, complete line of steel ranges, stoves, &c.; liberal commission. The Baldwin Stove Company, 859 Rose Building, Cleveland, Ohio. June 28

IRON WORKERS in a shop doing heavy sheet iron and structural work. "R. A. D.," care *The Metal Worker*, New York. June 28

FURNACEMAN and TINNER; good, first-class, all around man; must be sober, industrious and know his trade; steady employment the year round to the right man. Brock & Co., Lexington, Ky. June 28

At once, a first-class STOVE PATTERN FITTER; one who thoroughly understands his business; permanent position to the right man; state experience and wages wanted. Keystone Stove Foundry, Spring City, Pa. June 28

Three or four first-class CORNICE and SKYLIGHT WORKERS; wages, \$3 per day of eight hours for first-class men. James Ackroyd & Sons, Albany, N. Y. June 28

TINSMITHS; those having some experience in cornice work preferred. New Orleans Cornice Works, 619 Poydras street, New Orleans, La. June 28

A first-class PLUMBER; steady work to the right man; one of the best towns in Ohio; good wages. W. E. Frye, Marion, Ohio. June 28

A first-class, sober, honest and industrious PLUMBER; will give steady employment to the right man; wages, \$2.50 per day. Lock Box 682, Lake Geneva, Wis. June 28

A first-class, all around TINNER; one who understands both bench and outside work; must be sober; steady work and good wages to right man. Walter Tillson, 14 N. Joachim street, Mobile, Ala. June 28

At once, a good, reliable TIN and SHEET METAL WORKER who understands something of furnace work and general job work; young married man preferred; wages, 25 cents per hour; beautiful little city of 7000 and living cheap; state age. O. Knisely & Son, New Philadelphia, Ohio. June 28

Several first-class LIGHT SHEET IRON MECHANICS acquainted with application to fan system of heating and ventilating for shop work and erecting. C. H. Clifford & Co., 135 North Third street, Philadelphia, Pa. June 28

Practical GALVANIZER in a galvanizing plant which has just been installed by a large and prosperous concern; we want a thoroughly experienced man and none other need apply. Box 63, care *The Metal Worker*, 1205 Fisher Building, Chicago, Ill. June 28

A good, steady, all around CORNICE MAKER who can cut his own patterns, sober and reliable, as working partner, to take charge of a small shop; lots of work and a good town. Waterloo Cornice Works, Waterloo, Iowa. June 28

A PLUMBER in the Pacific Coast States; one who is a thorough mechanic, sober and willing to do a good day's work; we pay \$4.50 for eight hours' work; steady work for the right man. Box 64, care *The Metal Worker*, 1205 Fisher Building, Chicago, Ill. June 28

CORNICE MAKERS, CUTTER and FOREMAN wanted; first-class man. Mail Box 395, Builders' Exchange, Chicago, Ill. June 28

A first-class PLUMBER who can do a good job of tin work; to a first-class man a steady job will be given at good wages; at once. Frank R. Jarrell, Lexington, Ky. June 28

A thorough mechanic in the cornice, skylight and roofing business as SOLICITOR and ESTIMATOR; give full particulars as to ability and experience and state age, if married or single, and salary expected. "Thorough," care *The Metal Worker*, New York. June 28

TINNER; to a good, sober workman I can give steady work every day in the year; wages, 25 cents per hour. J. H. Jones, 414 East Main street, Streator, Ill. June 28

A TINNER to take charge of shop. H. G. Cormick, Centralia, Ill. June 28

SITUATIONS WANTED.

TIN PLATE SALESMAN with several years' experience, is open for a position, on salary or commission, with a reliable firm. "Experience," care *The Metal Worker*, Philadelphia, Pa. July 5

As FOREMAN in a first-class tin and sheet gears shop; am up to date with all kinds of blow pipe and furnace work; understand blue prints and know how to handle men to get best results. G. R. Martin, 552 North Eleventh street, Philadelphia, Pa. July 5

A first-class TINNER, understanding all kinds of in and outdoor work and a good blow pipe man, wishes a steady job. "A Tinner," General Delivery, Memphis, Tenn. July 5

First-class PLUMBER wants work, city or country; best of references given. Robt Smith, 1835 Third avenue, New York. July 5

PLUMBER; first-class jobber; 20 years' experience; in a first-class shop; thoroughly understands his business; neat and obliging. "B. B.," 1624 First avenue, New York. July 5

By a TINSMITH and SHEET IRON WORKER; temperate and reliable; proficient in all kinds of work; inside work preferred; moderate wages; A1 references. Frank M. Le Seur, 77 Barrow street, New York. July 5

By a first-class PLUMBER, steady position in a country town. "A. S.," 1237 Third avenue, New York. July 5

TINNER AND CLERK; 16 years' experience; first-class workman; sober and steady; inside job and bench work; state wages; will go anywhere. "Inside Work," care *The Metal Worker*, New York. July 5

As POLISHER of nickel or edges in stove works; can give good reference. J. S. Wlner, 171 West Water street, Corning, N. Y. July 5

By PLUMBER in country. George Conlin, 499 West 124th street, New York. July 5

By first-class PLUMBER in country. "F. R.," care E. Kimmerle, 155 First avenue, New York. July 5

As TRAVELING SALESMAN for stoves; Ohio, Indiana or Illinois preferred; can furnish reference. Box 68, care *The Metal Worker*, 1205 Fisher Building, Chicago, Ill. July 5

By a first-class STOVE SALESMAN, with some good house to represent them the coming season; have sold in New York State, Connecticut and New Jersey; speak German and English. "Road, 1902-03," care *The Metal Worker*, New York. July 5

TINSMITH and ROOFER is looking for a steady position; understands in and outside work, also sheet and iron work. Harry Walk, 516 East Sixth street, New York. July 5

PLUMBER wants job; steady, sober and reliable; 14 years at business. "I. X. Plumber," Wheeling, W. Va. July 5

EXPERIENCED LEAD WORKER on new work for sulphuric acid or other large plants; many years' experience; first-class references. "K. D.," care *The Metal Worker*, New York. July 5

By a young man, 22 years old, as BOOK-KEEPER and ESTIMATOR in plumbing and heating establishment; can figure any kind of job from plans; best of references. "J. F. C.," care *The Metal Worker*, New York. July 5

First-class STEAM and HOT WATER FITTER who is able to take full charge of construction heating or power work; thoroughly competent; 25 years' experience; A1 references; country work, high or low pressure, any system; understands plans and specifications, layout, handling of mechanics. "B.," 1624 First avenue, New York. July 5

A thoroughly competent man, accustomed to estimating all kinds of roofing, cornice, skylight and steel ceiling work, also hot air heating from plans, is open for an engagement; am a practical workman in above branches and detail and cut patterns for my own work; accustomed to handling from 12 to 20 men; age 35; married; a total abstainer; references. Geo. A. Van Tassel, Conneaut, Ohio. July 5

By an all around TINNER, a steady job; used to inside and outside work, heating and general jobbing; moderate wages for steady position. Charles Dutcher, 751 Superior street, Cleveland, Ohio. June 28

By sober, industrious young man, 32 years old, 15 years' experience, position as FOREMAN or charge of die and press room on sheet metal work; understands can work thoroughly; good executive ability in handling help; am thoroughly competent; acted as foreman for 11 years. "Competent," 29 East Main street, Bradford, Pa. June 28

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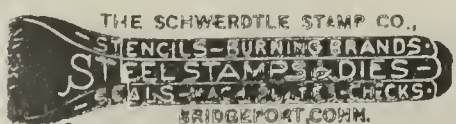
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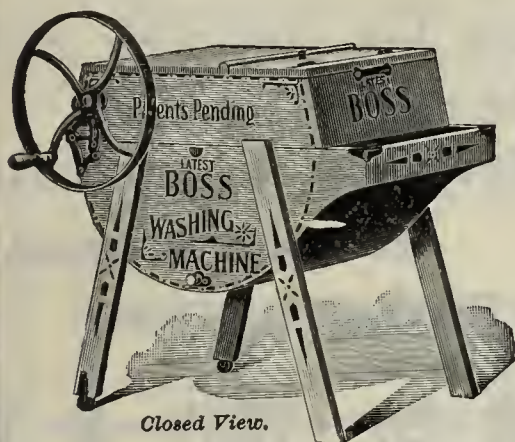
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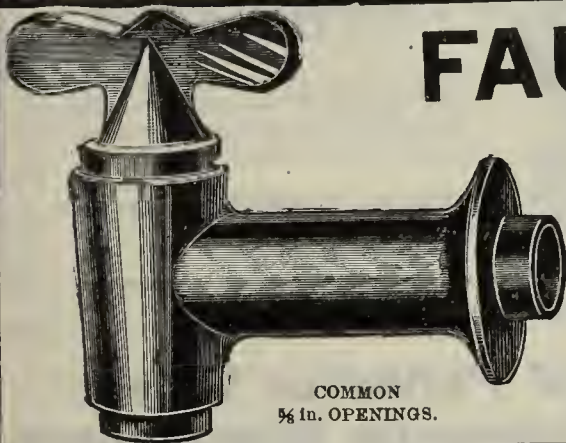
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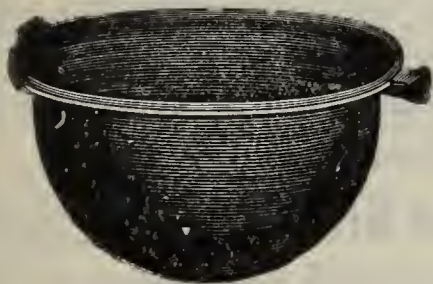
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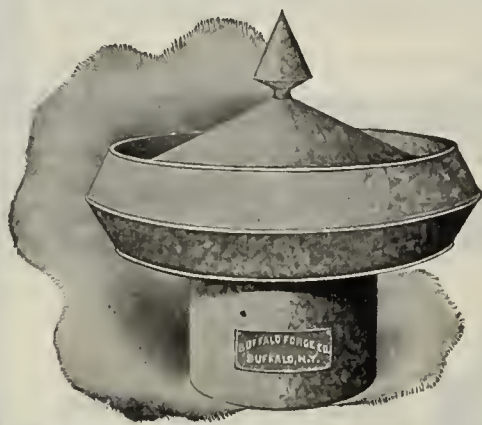
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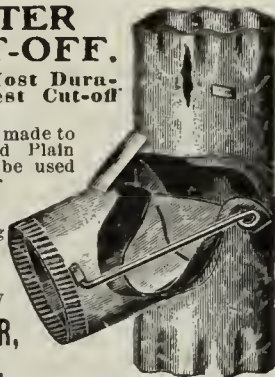
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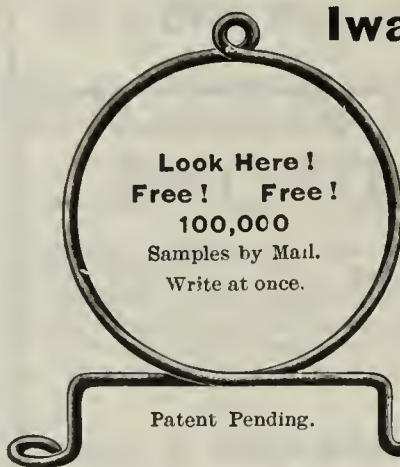
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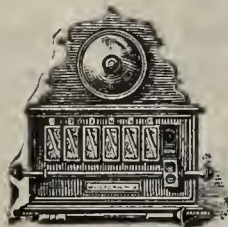
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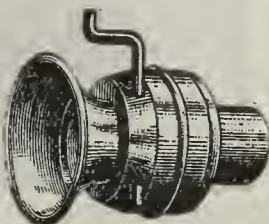
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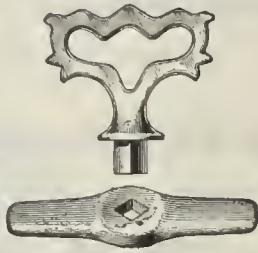
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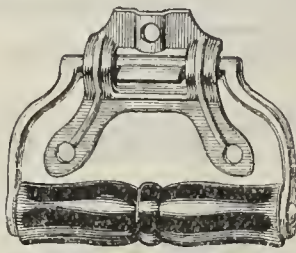
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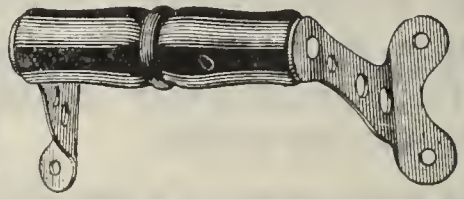
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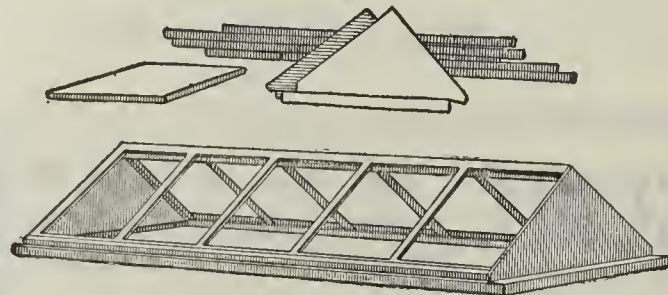
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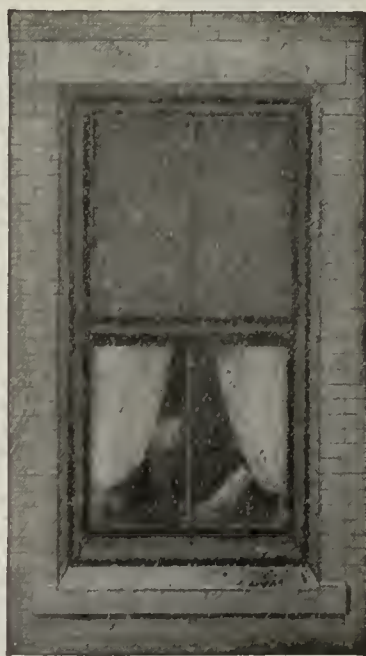
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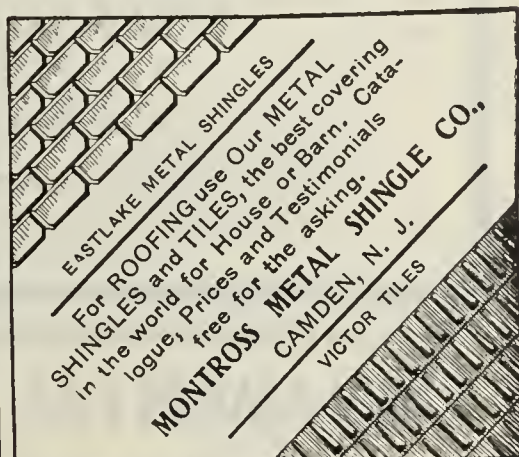
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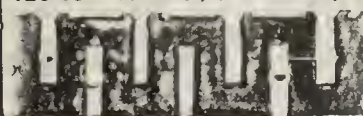
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SUMMARY OF CONTENTS.

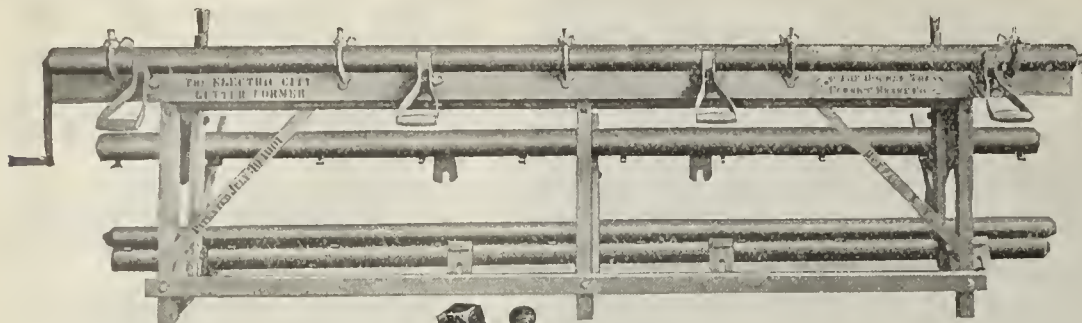
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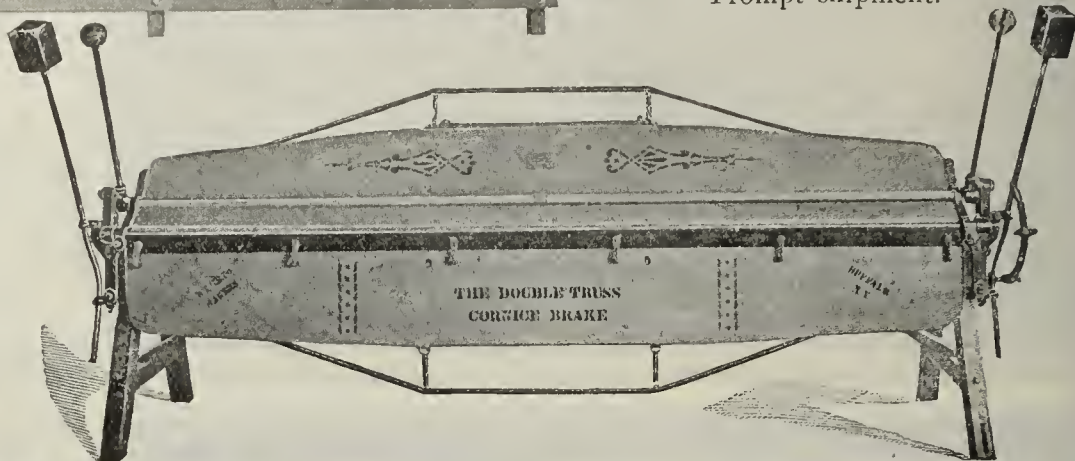
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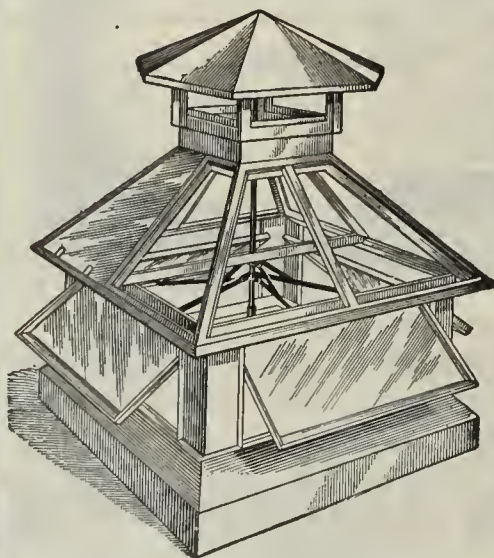
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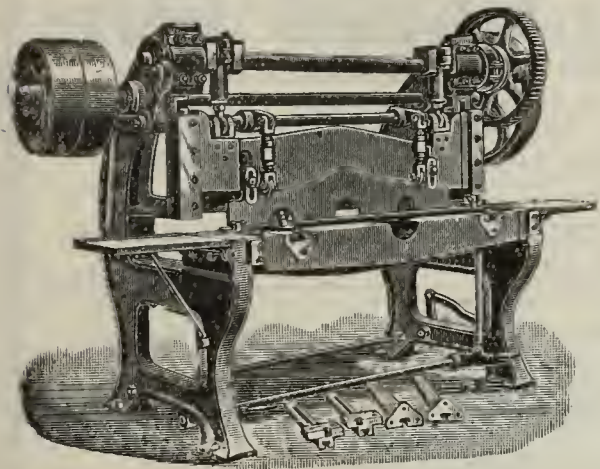
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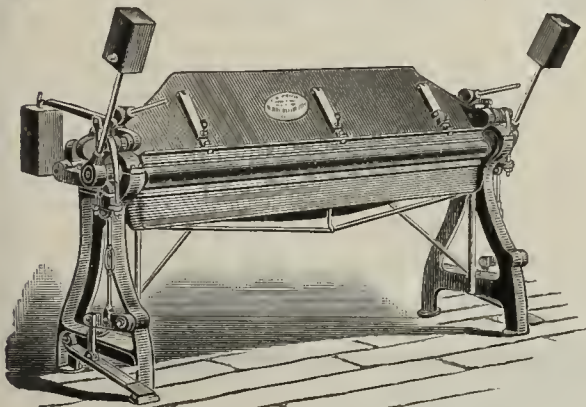
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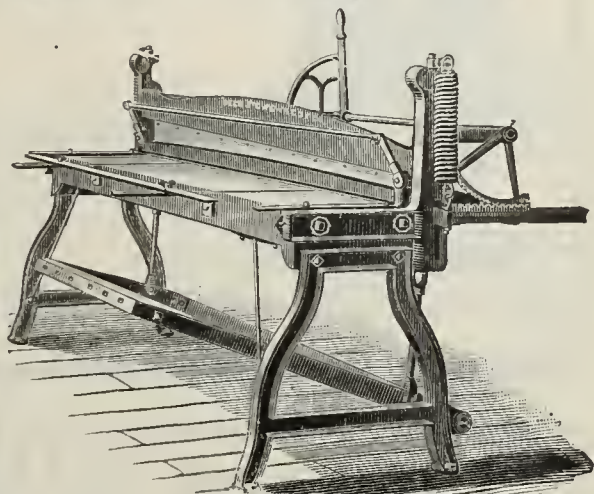


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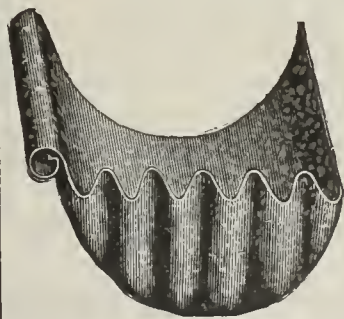
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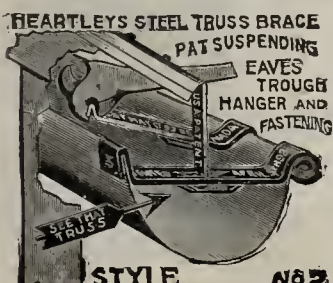


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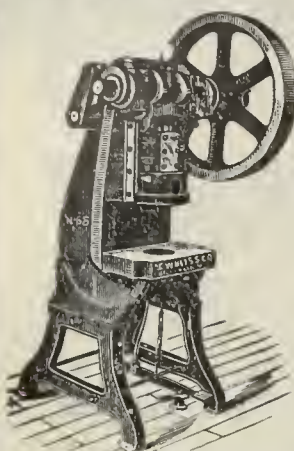
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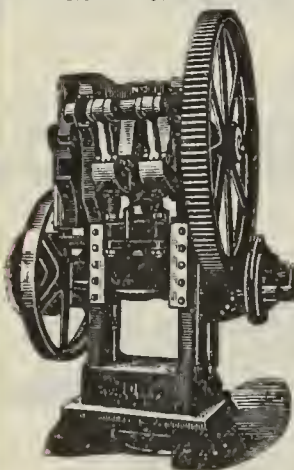


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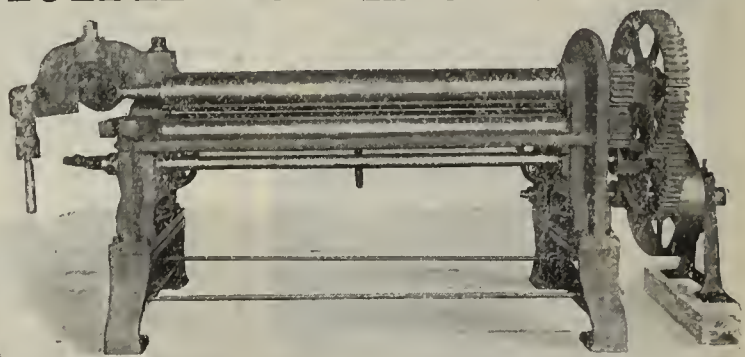
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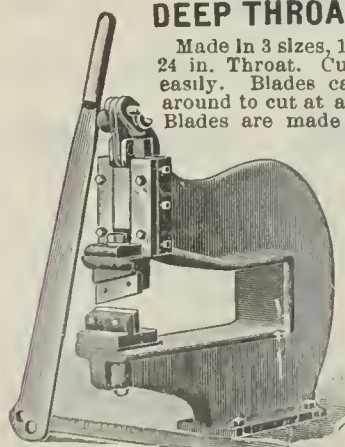
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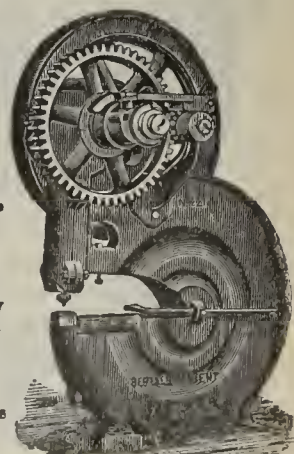
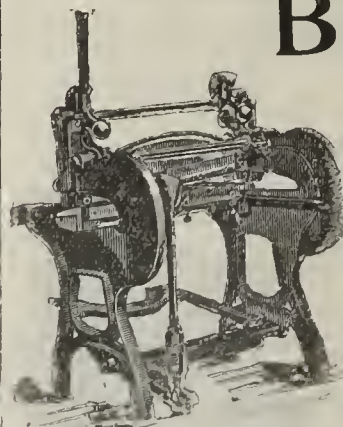
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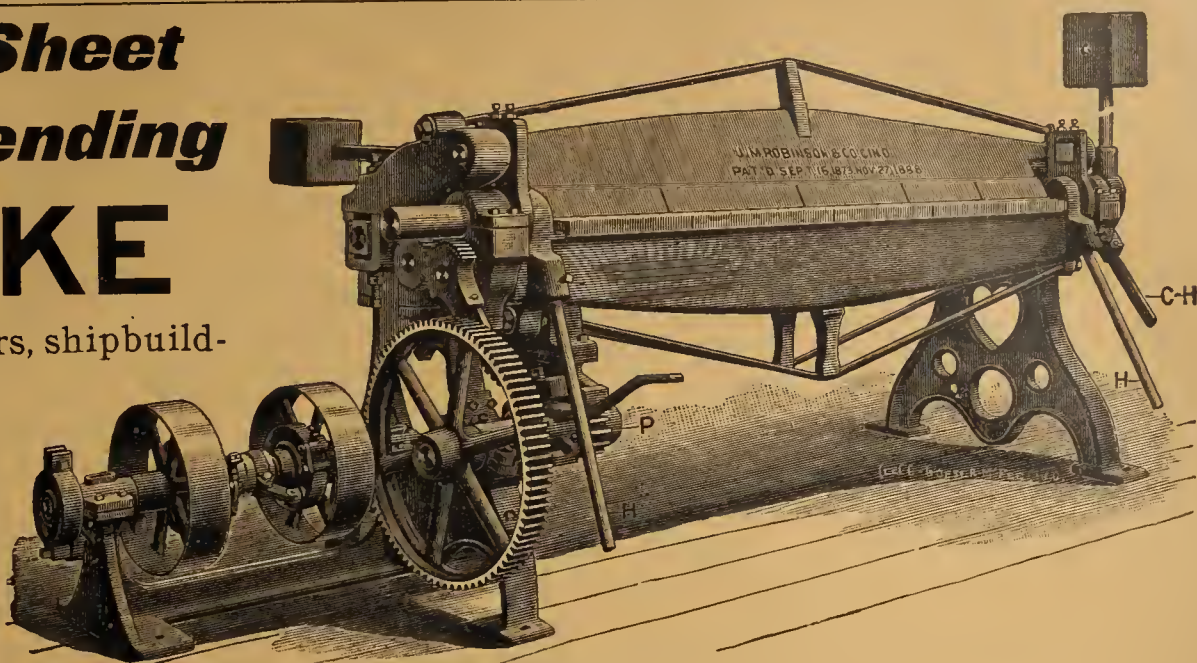
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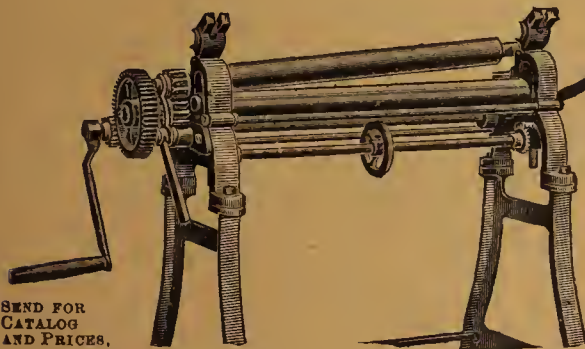
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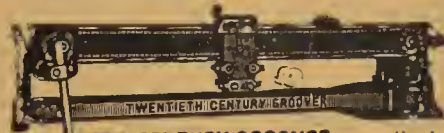
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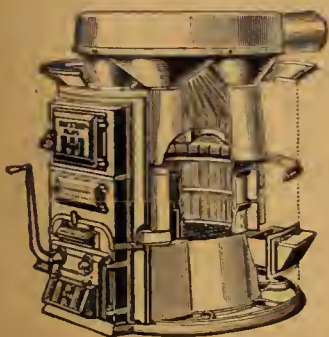
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Manufacturers of Tin and Terne Plate,
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THE SCHOOLS OF NEW YORK

use our special cluster reflectors. The most practical fixture in existence for stores, offices, hospitals, public and institutional buildings generally. Particulars on request.

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Bullitt Building, Philadelphia.

Dunbar Foundry Pig Iron.

Dunbar Connellsville Coke for Foundry Use.

American Sheet Iron Co.'s Sheet Iron.

American R. G., cleaned, of uniform black color.

Dealers in all kinds of Iron and Steel Scrap.

BRUCE & COOK.

TINNERS'

TOOLS and MACHINES.

TINNERS' SUPPLIES.

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248 & 250 Pearl Street,
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UTICA PIPE FOUNDRY CO.

"UTICA PIPE IS THE BEST." Cast Iron Soil Pipe. Cast Iron Water Pipe. Plumbers' Supplies and Lead Pipe.

CHARLES MILLAR & SON CO., Selling Agents, Utica, N. Y.

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If you want the best line; the line with the most attractive and progressive selling features, look into the merits of the

Hub

Line of Ranges,

Steam and Water Heaters;

Hot Air and Combination Furnaces.

SMITH & ANTHONY CO., Boston.

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on meritable goods is the motto of the man who handles the Glenwood line. He knows their reputation and quality. He knows that every part of a Glenwood range or heater is fitted and finished like a piece of machinery. He knows that every Glenwood sold means a satisfied customer—that's why it's business and a pleasure to handle

GLENWOODS.

Write the Weir Stove Company, Taunton, Mass.

McCLURE'S Genuine Charcoal Iron Redipped Roofing Tin.

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Manufacturers of Tin Plate,

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A WEEKLY JOURNAL OF THE
ROOFING, CORNICE, STOVE, TIN, PLUMBING AND HEATING TRADES.

With which is Incorporated The Stove and Tin Trade Journal, the Sheet Metal Builder, and Metal.

LVIII.
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NEW YORK AND CHICAGO, JULY 12, 1902.

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With Hill's Solid Dies $\frac{1}{8}$ to 3 inches.
 Especially adapted for Threading Wrought-Iron
 Pipes In Cramped Positions, as in Trenches, or In
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The Gorton Side Feed Boilers

FOR STEAM AND HOT WATER HEATING.

INVESTIGATE FOR YOURSELF.

Send for Catalogue and Prices.

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 Heating Specialties. American Steam Gauge & Valve Mfg. Co., Blsmark St., Boston, Mass., U. S. A.



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That's what you're doing when you put in a **Paragon Furnace.** Do your part
 of the installation properly and we guarantee that the furnace will be good. There will
 be no dispute about your bill. It will be promptly paid, and you will make quite some
 money on that man's other necessities in your line.

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APOLLO BEST BLOOM
 GALVANIZED IRON

The metal-worker who
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 iron makes his business
 harder to do and harder
 to get; and, of course,
 his profits less.

American Sheet Steel Company, New York

Steam Specialties.

LIEF and NOISELESS BACK
 EVAPOR VALVES, PRESSURE VALVES,
 STEAM TRAPS, PUMP GOVERNORS,
 STEAM AND WATER, STEAM AND OIL SEP-
 ARATING VALVES, ARATORS
 TEMPERATURE CONTROLLER and
 A No. 1 DAMPER REGULATORS
KIELEY AND MUELLER,
 17 W. 13th St., - NEW YORK.

A coal dealer told one of our customers if he
 would quit handling

Stewart Stoves

in that town, he would buy one. He bought one
 any way. Reasons are obvious. GREAT FUEL
 SAVERS ARE P. P. STEWART STOVES.

FULLER & WARREN CO., Troy, N. Y.

This Ad. changes every week.

NOTICE.

Silver, Nickel Platers and
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Write for prices to John Sommer's Son, 855-865 Central Ave., Newark, N. J.



CROSBY SPRING-SEAT GLOBE and ANGLE VALVES, IRON and BRASS.

All working parts renewable without taking the valve
 from piping. All parts interchangeable. Guar-
 anteed not to leak at high pressure. Send for circular.

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BOSTON: 95 Oliver St. NEW YORK: 78 John St. CHICAGO: 21 23 W. Lake St.



JENKINS IMPROVED AUTOMATIC AIR VALVES.



Suitable for high or low pressure. Take
 no more room than an ordinary air cock.
 Endorsed by the leading steam experts as the
 best made and the quickest working. All
 genuine stamped with our Trade Mark.
JENKINS BROS., New York, Boston, Chicago, Philadelphia.

FOLLANSBEE BROTHERS CO.,
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 Galvanized and Black Sheets.
 Sheet Copper, Conductor, Eave Trough.

FOUR WINNERS:

Follansbee Pure Iron Old Style,
 Scott's Extra Coated,
 Old Reliable Redipped,
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Philadelphia, 133 Arch Street.
 Chicago, 504 North Water Street.
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READ OUR "AD"
 Page 7.

MAGEE FURNACE CO.,
 Boston.

ROUND OAK STANDARD OF AMERICA

How many times it happens
that the furnace man
who knows better
is beguiled into
placing the furnace
cold and warm air ducts
where the lady of the house
wishes them—instead
of standing up
for what he knows
to be the right way.

He fears to lose
the sale, of course
and there is one cause
of so much
bad furnace work.

When our advice is asked
and we make the plan
we insist upon its
being "set" our way.

If any changes are projected
we do not ship the furnace.



MOTHER AND PAPOOSE

Estate of P. D. BECKWITH

Makers of Good Goods Only

DOWAGIAC, MICH.

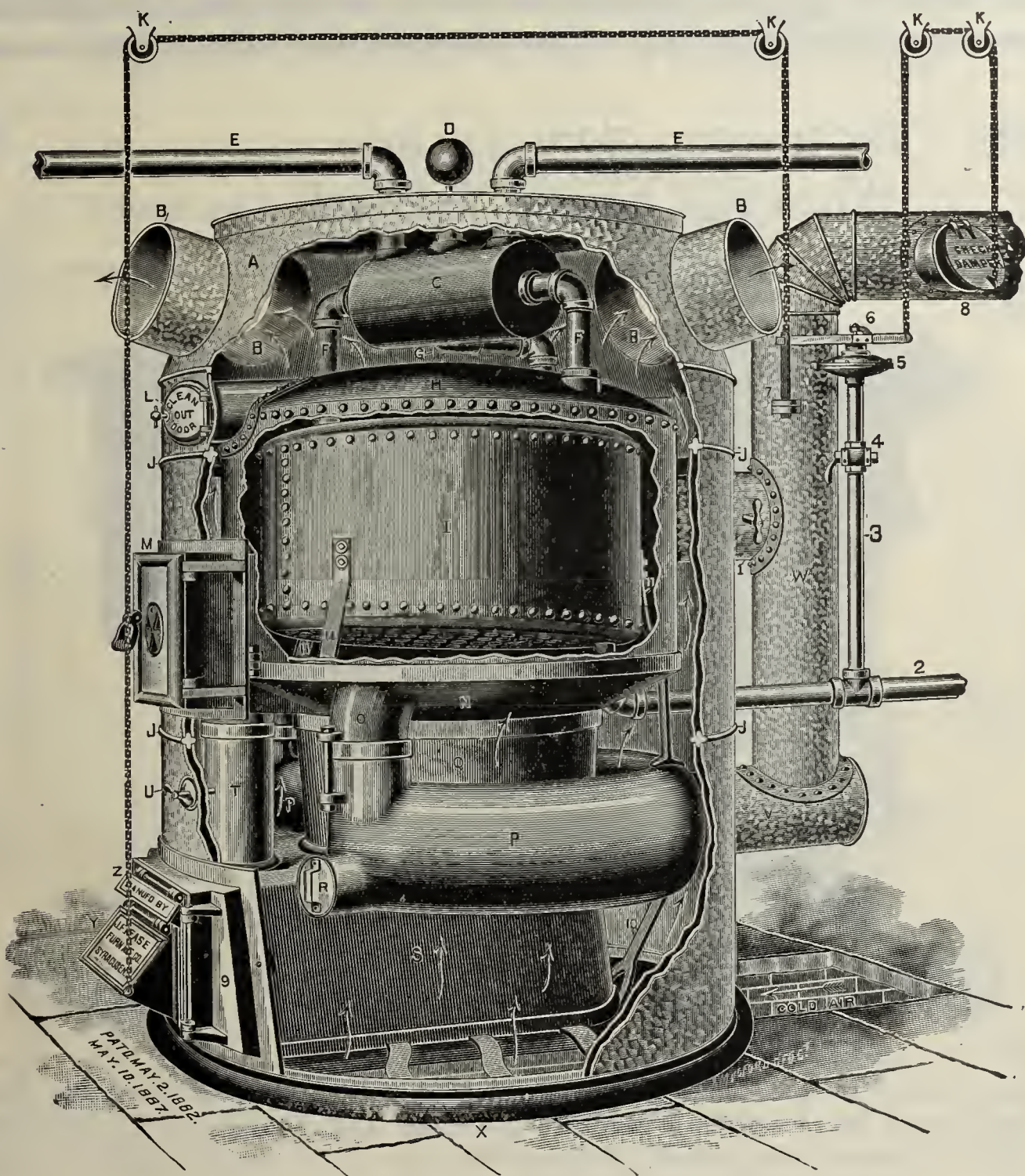
DIFFERENT PEOPLE LOOK AT
DIFFERENT THINGS DIFFERENTLY.

BUT EVERY INTELLIGENT MAN KNOWS THAT
IT IS WISER TO SELL GOOD GOODS.

The Pease-Economy Combination

FOR STEAM AND WARM AIR

IS A THOROUGHLY RELIABLE APPARATUS.



LOW DOWN PATTERN.

The Economy Combinations were First in the Market.

There have been more of them sold, by far, than of all other makes put together.

In their present improved form they very closely approach perfection.

NOT EXPENSIVE, EITHER.

New Boiler Catalogue just issued. Catalogue of our Acetylene Gas Machine
will interest you.

INTERNATIONAL HEATER CO.,

UTICA, N. Y.

BOSTON.

NEW YORK.

CHICAGO.

DENVER.

Largest Makers of Heating and Lighting Apparatus in the World.



Moore's Stoves



*Blow your Horn, (we do)
When you have fish to sell, (we have)*

Says the old adage, and that's why we do so much horn blowing about our



Quick Oven Steel Cook Stoves

We originated this kind and were the only makers for several years. Thereby we gained *early* experience in the ways in which good steel cook stoves should be made. Our constant improvements in this direction easily keep Moore's by long odds the favorite. Messrs. John Guff & Company, Williamsville, Iowa, write under recent date:

"We wired you to-day for six more Medal Cooks same as last. Get them to us quick Last lot came in a week ago and are all gone. It's the only stove selling around here."

This tells the story.

JOLIET STOVE WORKS, Joliet, Illinois,

HOLBROOK, MERRILL & STETSON,

San Francisco, Sacramento, Los Angeles.

QUICK MEAL



POLISHED STEEL RANGES

Have Nickered Corner Tubes, Nickered Oven Door, Nickered Ash Door, Nickered Feed Door, Nickered front edge of Top Plate, and Nickered Towel Bar. The Beaded edges of the High Closets and High Shelves are Nickered and formed up in shapes to correspond with the Corner Tube construction of the Range. This makes the "Quick Meal" Range handsome, well-proportioned and attractive.

Easy to Sell and Keep Sold.

RINGEN STOVE CO.

SAINT
LOUIS.

AND HOLD YOUR FRIENDS

WILL ATTRACT YOUR CUSTOMER



The Good Luck Base Burner.

"ONE OF THE FINEST."

NO BETTER AT ANY PRICE.

FIVE FLUES—three for radiation, two for circulation or double heating.

Ransom Duplex Grate—"Lift Out" Fire Pot.

Removable Nickel—Highly Polished.

Smooth Castings Perfectly Fitted.

The Cut Shows it is Good Looking.

We Guarantee the Operation and Finish.

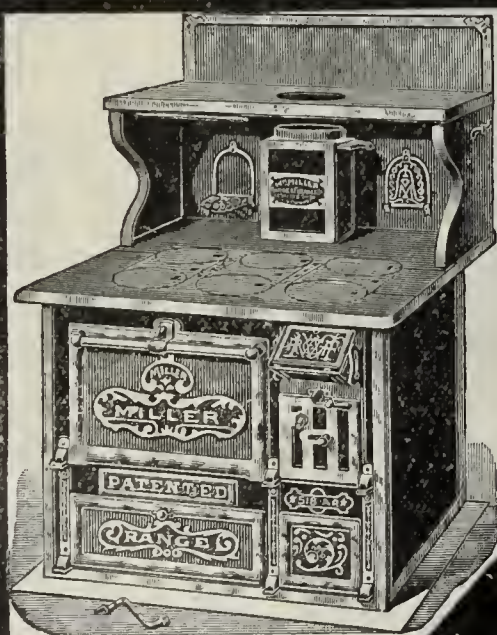
It is Full Size and Full Weight.

It is Medium Priced.

You ask, "How can you give so much for the money?"

We answer, "It is Made in Pittsburgh."

PITTSBURGH STOVE & RANGE CO.,
PITTSBURGH, PA.



All bright parts
Nickeled
instead of
Polished.

WITH Improved removable Duplex Grate, Improved Water Back for heating water, Flue Lined with Pure Asbestos Board, New Non-Warping Oven Bottoms, Cold-Handled Gravity Latch, Drop Oven and Feed Door, Patent Double Centers, Regulating Damper, Nickel-Plated Towel Rod.

Nickel Bands on doors are ventilated to prevent tarnishing, and body of Ranges is highly finished.

GEM-MILLER RANGES

The
Wm. Miller
Range & Furnace Co.

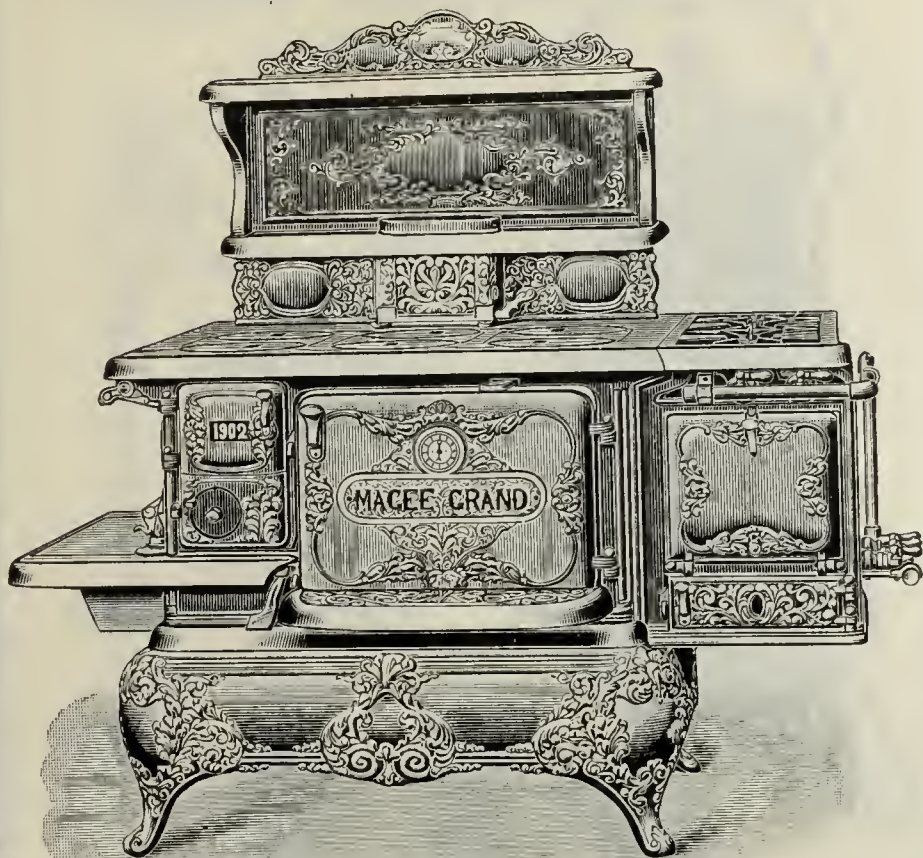
125 and 127 E. Fifth St.
CINCINNATI, O.



..MAGEE GRAND..

Combination Range.

EITHER COAL OR GAS. OR BOTH TOGETHER.



A DISTINCTIVE FEATURE.—You can sell the Range now and add the Gas Attachment at any time.

It Stands in a Class
by Itself,

and reduces cooking to the
science of absolute ease and
uniform goodness.

Cut shows Gas Oven,
Broiler and Two-Burner At-
tachments.

Oven is $10\frac{3}{4}$ in. wide, 18
in. deep, $9\frac{1}{4}$ in high.

Send for further informa-
tion and prices.

DO IT NOW.

MAGEE FURNACE CO.

32-38 Union St., Boston.

WESTERN AGENCY:

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Steam and Hot Water Boilers.
Furnaces, Warm Air or Combina-
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Ranges, Stoves, Etc.

CITY BUCKEYE RANGE.

For Hard, Soft Coal,
Wood or Coke.

MADE IN 17 AND 19 INCH OVEN.

Square Top and Bracket Reservoir
Fitted with Water Heater.

AN ATTRACTIVE PIECE
OF GOODS AND ...

A Ready Seller.

Write for Descriptive Catalogue
and Prices.

OHIO STOVE CO.

Portsmouth, Ohio.



The Dangler Oil Heater, 1902

Height, 27 in.
Weight, 10 lbs.
None better.
Made of polished
Steel, with either
Brass or Tin
Tank.



Ornamental,
Durable,
Powerful and
Simple in
Operation.
For sale by
Jobbers and
Dealers everywhere.

THE DANGLER STOVE & MFG. CO., CLEVELAND, OHIO, U. S. A.



1903 Reliable Oil Heaters

RELIABLE Oil Heaters have always been conceded Leaders. This season they are finer than ever. TO THE RELIABLE IS DUE THE CREDIT OF THE PERFECTION AND POPULARITY OF THE OIL HEATER TO-DAY. ✿ Our Gas Heater line is the largest and most complete. Write for catalogue and prices.

MADE BY

THE SCHNEIDER & TRENKAMP CO.
CLEVELAND CHICAGO SAN FRANCISCO

SOLD EVERYWHERE

HOME COMFORTERS FOR



"NEW PROCESS" AND "STANDARD" OIL HEATERS.
MADE BY **THE STANDARD LIGHTING CO.**
CLEVELAND OHIO.

Sold by Jobbers and Dealers everywhere.



I Will Give the Public the Benefit.

Having completed patterns for my 1902 line, I will close out my last year's pattern of the celebrated

400 LB. WILLARD STEEL RANGE for \$15.00

This is Less than 4c. per pound.

They have six 8 inch lids. Oven, 17 x 21 x 12. Top Cooking Surface, 30 x 36. Large Warming Closet. 15 gallon Reservoir. Duplex Grate, Burns Wood or Coal. Lined throughout with Asbestos.

EVERY ONE GUARANTEED. BUY NOW AND SAVE 100%.
Write for Free Descriptive Circular and Testimonials.
"FIRST COME—FIRST SERVED."

WM. G. WILLARD,

619-621 N. 4th St., - - - St. Louis, Mo.

STOVE DEALERS WILL SAVE MONEY IF BUYING FROM THE
Metropolis Sheet Metals and Stove Repair Co.

MAIL ORDERS PROMPTLY FILLED.

Manufacturers of **GAS STOVES, STOVE PIPES, ELBOWS, DRUMS, Etc.**

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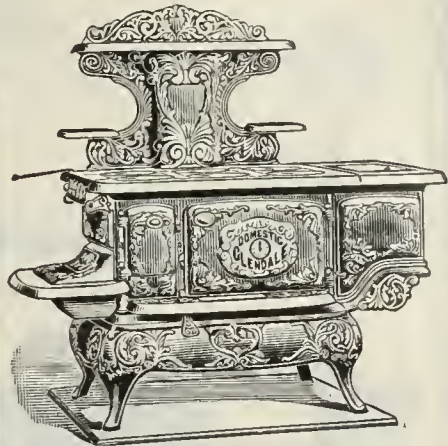
A FULL LINE OF STOVE REPAIRS, UP TO DATE.

Write for Prices.

261-261½ Springfield Ave., Newark, N. J.

GLENDALE

Stoves and Ranges



Manufactured by
SOMERSET STOVE FOUNDRY CO.,
SOMERSET, MASS.

Send for a Sample.

**THERE'S
A UNION
LABEL
ON EVERY
HOUSEHOLD
RANGE**

That means good work, good materials and well-paid workmen.

Remember that this range is popular with all classes. It wins on its merits. If you want the agency write now to

**THE
WHITE, WARNER CO.
TAUNTON, MASS.**

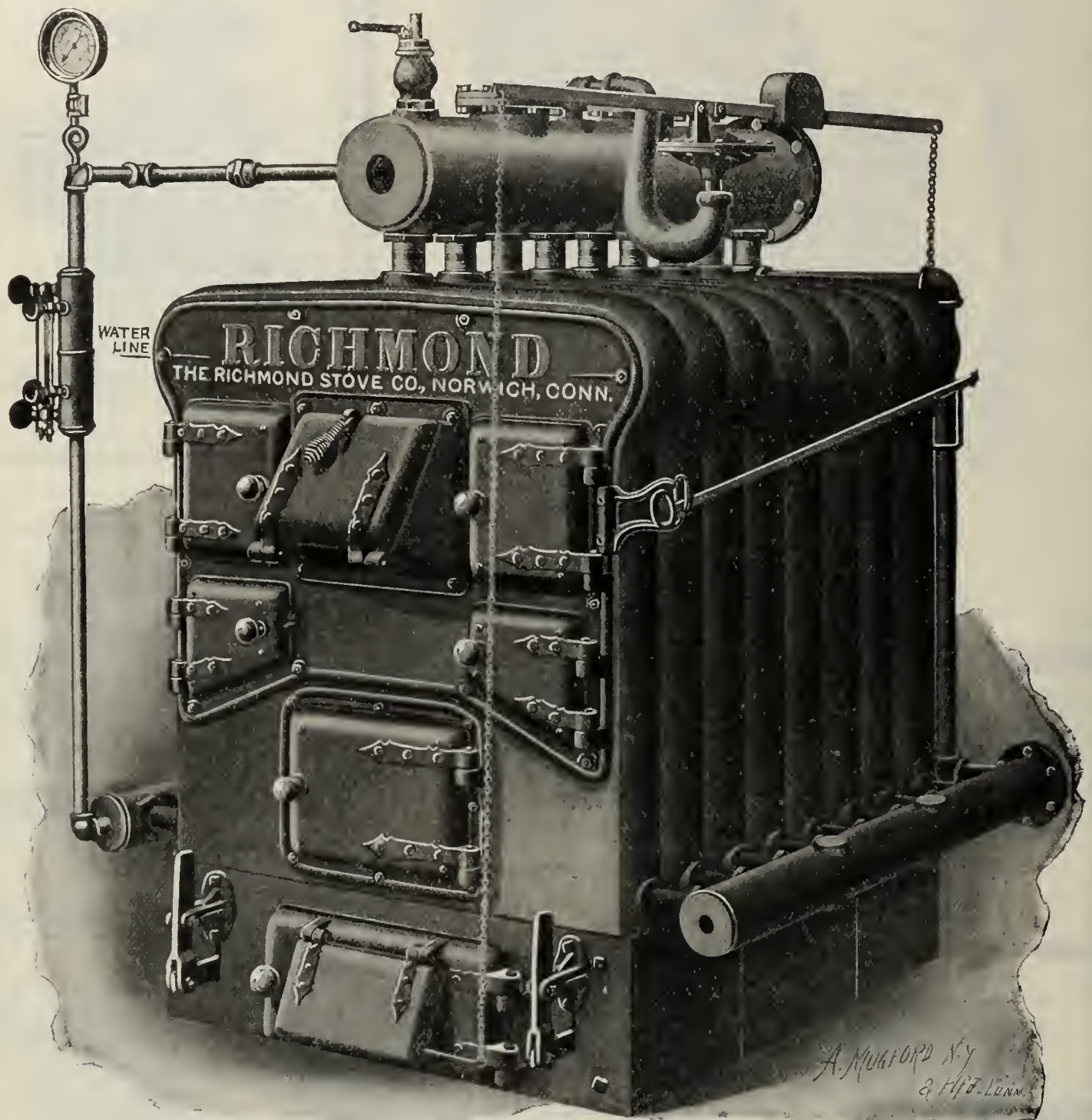
THE S. & S. PATENT
Stove Pipe Thimble

Locks the Pipe from Pulling Out, and from Pushing In and Closing the Draught. Will last a lifetime. Nothing to wear out, and costs but a trifle. Send for sample and prices.

**City Forge and
Iron Works,
DAYTON, OHIO.**

RICHMOND

Heaters that HEAT.



Get in line and be up to date in the boilers
you buy as you are in other things.

WRITE TO-DAY FOR CATALOGUE X.
And learn something about our New Heaters that HEAT.

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PITTSBURG, 210 Ferguson Bldg.
CHICAGO, Chicago Heater & Supply Co.

ST. LOUIS, Rumsey & Sikemeier.

THE H.B. SMITH CO.,
WESTFIELD, MASS., U.S.A.

Catalogue furnished only upon application to
Heating Contractors, Engineers and Architects

92 Pages. Size 9 x 12 Inches.

**COTTAGE
BOILERS.**

STEAM BOILERS (8 SIZES), 550 SQ. FT. RADIATION SUPPLIED.
WATER BOILERS (8 SIZES), 900 SQ. FT. RADIATION SUPPLIED.

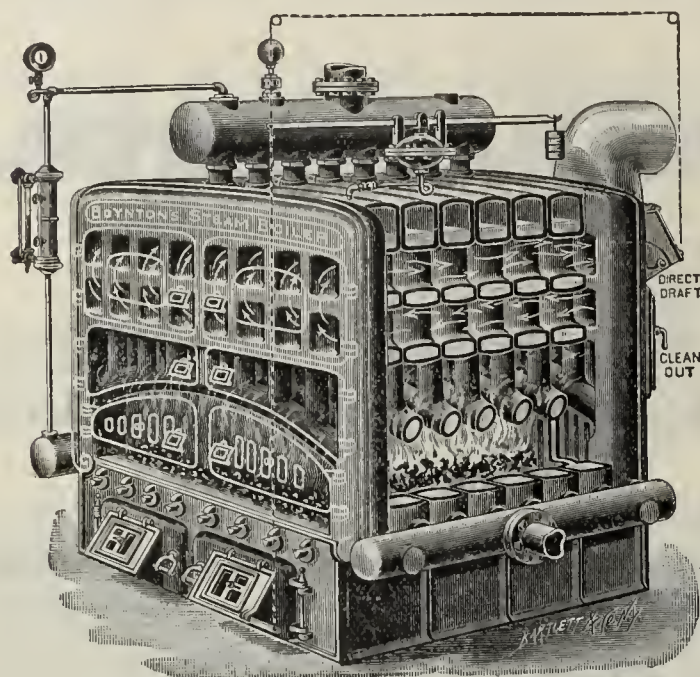
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133 CENTRE STREET, **510 ARCH STREET,**
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THERE'S NOTHING OVERLOOKED IN THE MAKE-UP OF OUR BOILERS.



Every Mechanical Improvement of the Alert and Progressive
American is Represented in Their Construction.

INFORMATION AND PRICES ON APPLICATION.

The **BOYNTON FURNACE CO.,**
NEW YORK. CHICAGO.

If You Propose to take a Vacation

and should visit New York, we invite you to call and see us and
to examine our line of **Warm Air Furnaces.** Our



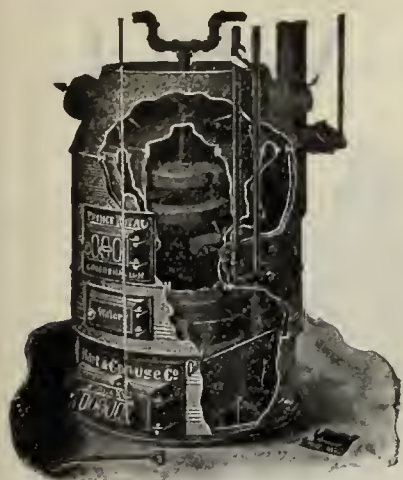
FAULTLESS, HERO, COMFORT and RIVAL Furnaces

would interest you because they are **all
right in every respect.** If you are
wanting a **full line**, or only a **side line**,
of Furnaces we believe we can suit you.
Our goods give satisfaction, and our
prices are reasonable. Shall be glad to
see you or to hear from you.

THE GRAFF FURNACE CO.,

Manufacturers.

208 Water Street, New York.



Royal Heaters.

HART & CROUSE CO.,

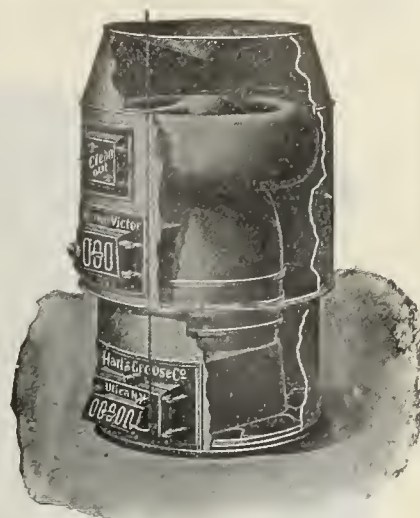
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78 Lafayette St.,
UTICA, N. Y.

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Chicago.

The Leading Line of Heating Apparatus.

**HOT WATER,
STEAM,
HOT AIR.**



Emperor Furnaces FOR WOOD.

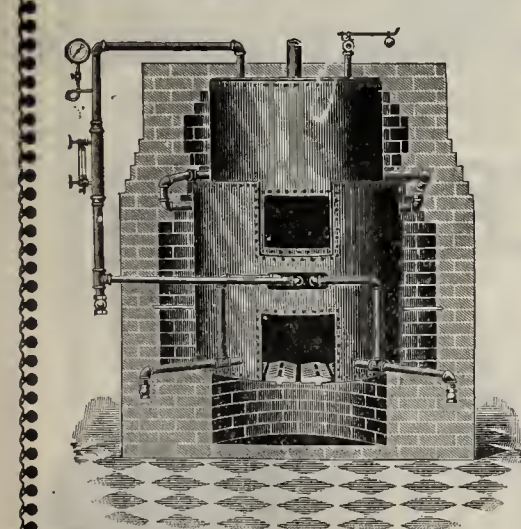
Simple, Safe, Durable. Economical in Fuel.

The Best and Cheapest Line of Wood Furnaces. . . .
Furnished for either Brick or Galvanized Iron Casing

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NEENAH, WIS.



**THE
HAXTUM**

**A Steel Brick-Set Boiler for Steam and Water
Heating—Hard or Soft Coal.**

HAS AN ESTABLISHED REPUTATION.

SOLD ON MERIT.

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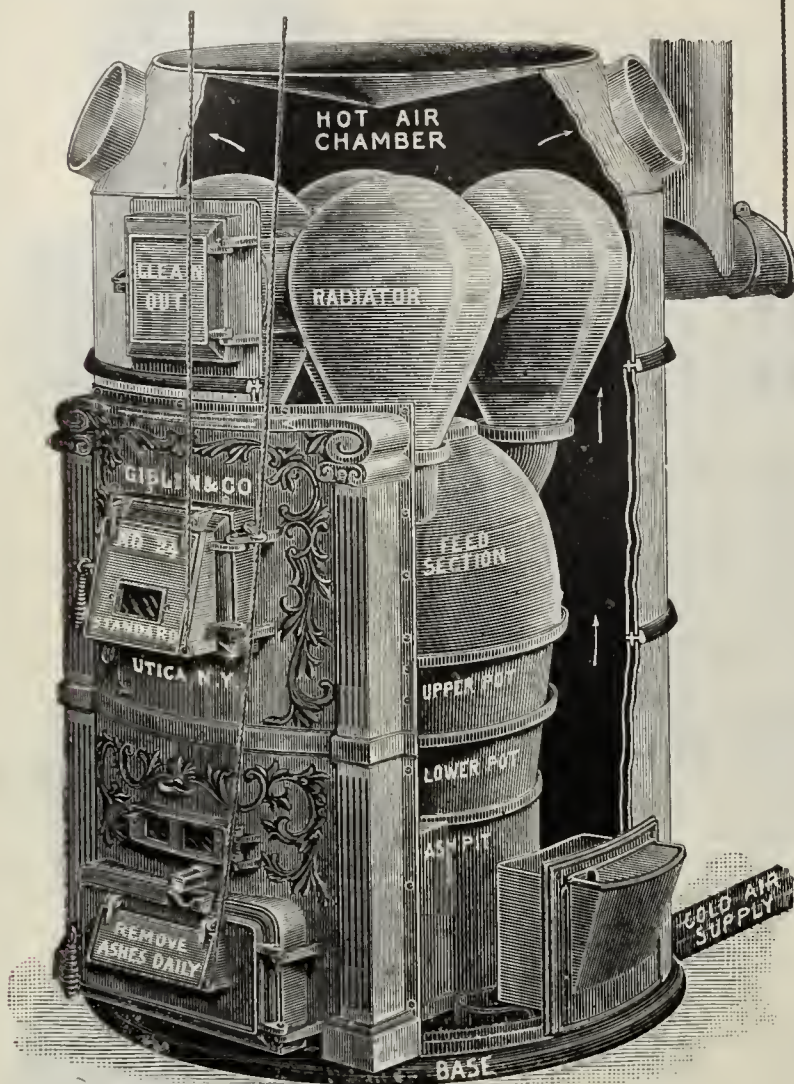
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KEWANEE, ILL.

Eastern Representatives:

MODEL HEATING CO.,
Philadelphia, Pa.
New York, N. Y.
Buffalo, N. Y.
Boston, Mass.



WORK WELL DONE AT LITTLE COST

SOMETIMES

a furnace costs little but makes up the cheapness in the quantity of coal it consumes; sometimes a furnace costs a great deal and the extra cost is made up by the saving of the fuel; sometimes a furnace costs a moderate price and does the work well and saves fuel.

A FURNACE

of the latter class is shown here-with, and our catalogue shows it more thoroughly.

Here is the experience of one man with this style of furnace:

L. J. CLARK, Villas, Pa., says:

"I want to tell you how my furnace acted one winter. Down stairs I heat 3 rooms and pantry and hall, using a gasoline stove for cooking; upstairs I heat 3 bedrooms, bathroom and hall, and also have one register in attic, which was used occasionally, making in all 10 registers. I moved into the house on the 4th of November and had fire up to the 5th of May. I bought 8 tons of soft coal at \$1.80 per ton, total \$14.40. I had about 1 1/4 tons left over. We had loads of hot water heated in furnace, so that fuel for gasoline stove only cost about \$2.10. This looks rather small for expense, but nevertheless it is a fact."

GET OUR
CATALOGUE
AND PRICES.

GIBLIN & CO.,
UTICA, N. Y.

Height over all,
4 ft. 3 inches.



The FORBES FURNACE.

You run no risk in putting in the
Forbes Furnace.

When properly installed we guarantee them in every case.

They are constructed entirely of cast iron.

No sheet iron drums.

Our radiating tubes are 1/8 in. thick, and will wear for years.

Specially suited for low cellars.

SEND FOR CATALOGUE AND FULL PARTICULARS.

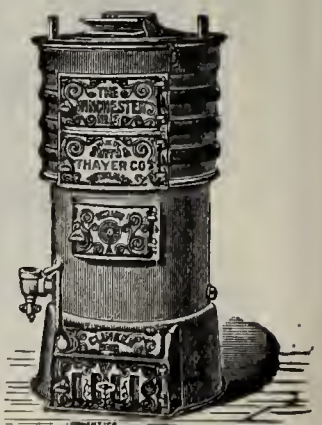
Tubular Heating & Ventilating Co.,
228 Quarry St., Philadelphia, Pa.



WINCHESTER

This is a strange world, yet that is no reason why you should be a stranger to the admirable points of a "WINCHESTER" heater. Become acquainted with it, and you will be, not a stranger, but a close friend. Smith & Thayer Company, Boston, Mass.; 105 Beekman St., New York.

HEATER.





You Must Win Out.

The department stores win out because they cater to all classes of trade. You may do the same thing with

"GURNEY" HEATERS,

BRIGHT IDEA 400 SERIES and DORIC.

For heating large buildings, halls, etc., we furnish "Bright Idea." For heating smaller buildings, residences, greenhouses, etc., "400 Series," and for dwellings, "Doric" Heaters. Thus you don't have to pass by any want. You can bid on them all—and successfully, too, because "Gurney" Heaters **will accomplish more at less cost than any heater made**. Based on actual value, it's easily the cheapest one in the market. Catering to all classes of heating wants

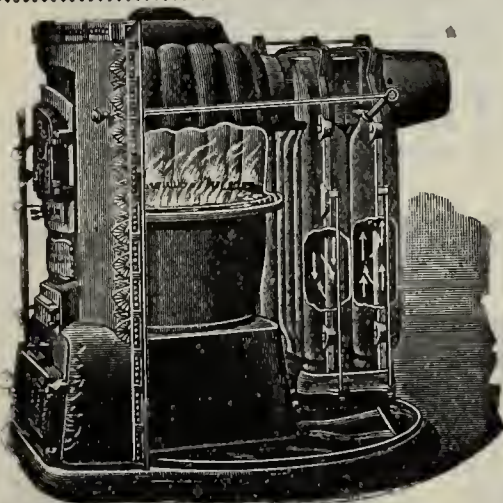
and possessing these marked excellences, you must win with a "Gurney" agency. Write for full particulars and latest catalogue

Gurney Heater Mfg. Co.,

74 Franklin St., Boston.

111 Fifth Ave., New York City.

Western Selling Agents, James B. Clow & Sons, 358 Franklin St., Chicago, Ill.



DON'T YOU THINK IT ABOUT TIME TO
INVESTIGATE OUR CLAIMS FOR THE

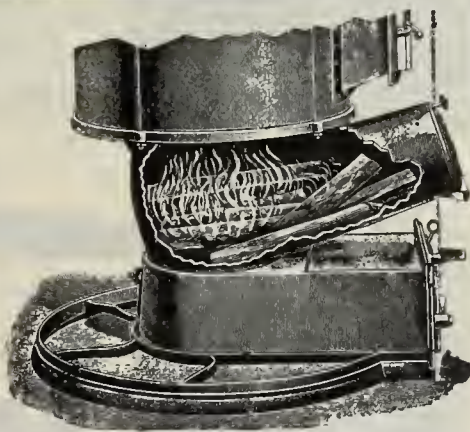
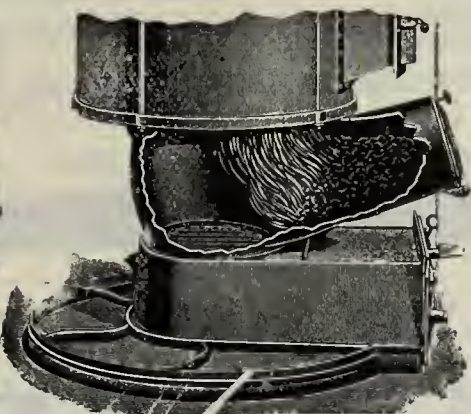
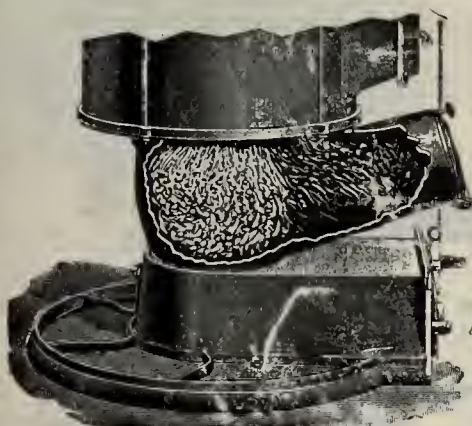
BENGAL FURNACE?

Let us send you free booklet.

FLOYD, WELLS & CO., Royersford, Pa.

Eastern Selling Agents:
GURNEY & CO.,
Washington, Hanover and Elm Streets, Boston, Mass.

NEW YORK OFFICE, 210 WATER ST., R. W. HILLMAN, Manager.



THREE PRACTICAL USES

to which the *Combination* Fire Bowl and *Coking Magazine* used on the **PATRIC FURNACE** may be put.

The first cut shows soft coal undergoing coking process in magazine, with coked coal in main bowl. A *great fuel saver*. Second cut illustrates fire carried only in magazine, for light spring and fall heating, a *great convenience*. Third illustration shows furnace used for wood. A *success for twenty years*.

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THE PATRIC FURNACE CO. = Springfield, Ohio.

BRAND STOVE CO.

STOVES, RANGES and
FURNACES.

SEND FOR CATALOG.

MILWAUKEE, WIS.



ONE SALE

MAKES
ANY
MORE, therefore the dealer who
has the sale

OF THE STANDARD STEEL

furnace is sure to rapidly increase his business. It is time tried. Its merits are many. Its radiating surface is enormous; material and workmanship unsurpassed.

Our catalog is
FREE for the asking.

WRITE FOR IT NOW.

GIBLIN & CO., Utica, N. Y.



IF YOU ARE NOT SELLING THE

Peck-Williamson Underfeed Furnace

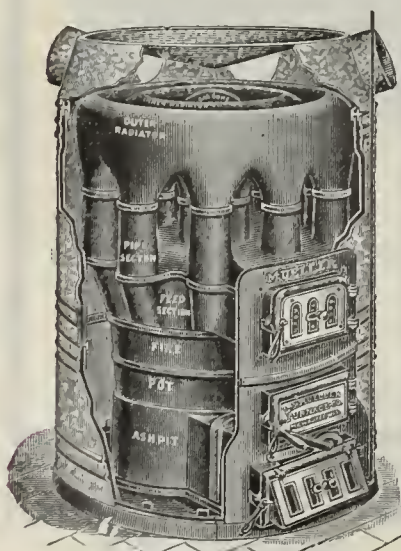
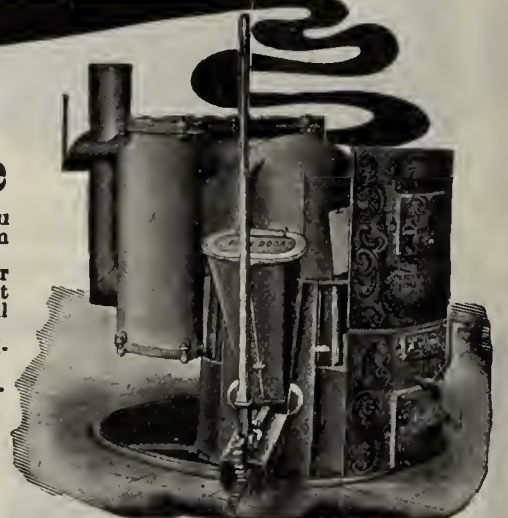
you have not the trade and are not making the money you might. Just a pull or two of the lever feeds the new coal from underneath.

The Underfeed Furnace consumes less fuel than any other furnace ever built. The coal is burnt more slowly. All the heat units from it, as well as from the smoke, are utilized and all smoke eliminated.

Our handsome booklet explains its splendid heating qualities and coal saving.

You may have this booklet and our special plans for selling. Ask for booklet about our Laundry Dryer also.

**THE PECK-WILLIAMSON COMPANY,
CINCINNATI, OHIO.**



DO NOT BUY MUELLER Furnaces and Boilers UNLESS

You Want the Best Article on the Market.

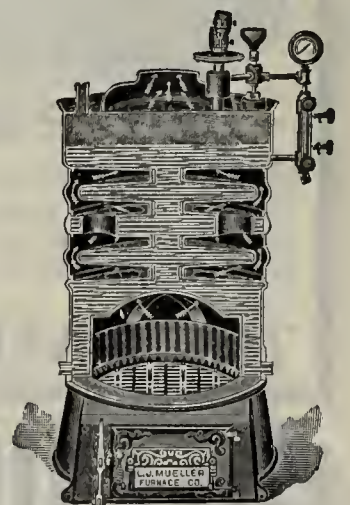
HEATERS IN ALL STYLES—FOR ALL KINDS OF FUEL.

Write for Catalogue and Prices.

EVERYTHING IN THE HEATING LINE.

ESTABLISHED 1857.

L. J. MUELLER FURNACE CO.
180 REED STREET, MILWAUKEE, WIS.



Our New Ideal Premier Tank Heater

is now ready for the market, and we invite your critical examination of its various features of construction.

Send for 1902
profusely illustrated catalog.

AMERICAN RADIATOR COMPANY

Lake and Dearborn Streets,
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Ideal Premier Tank Heater.

New York,

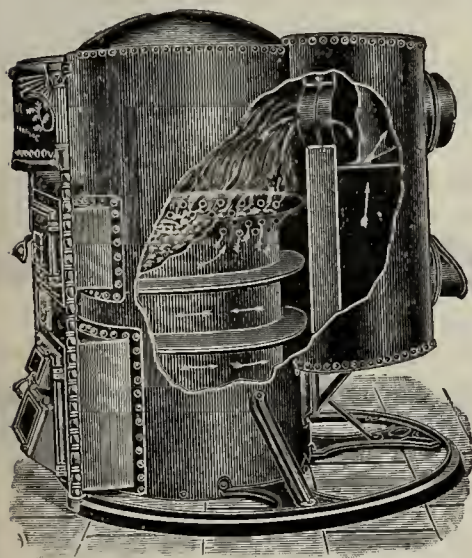
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WEIR ALL STEEL GAS AND SOOT CONSUMING FURNACE.

THE HEAVIEST STEEL FURNACE MADE.

Absolutely gas and dust tight. A great heat-producer but a fuel saver.

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THE MEYER FURNACE CO.,

1300-1304 S. Washington St.,

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PEORIA, ILLS.

"The Handy Furnace Pipe."

MADE WITH A VIEW OF BEING SAFE.

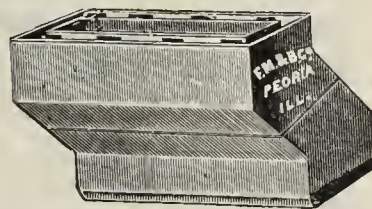
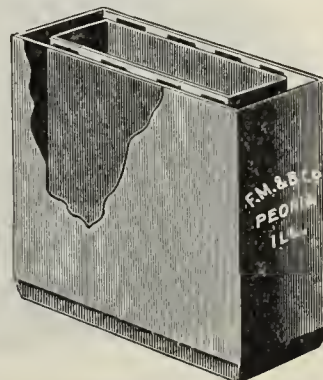
The saving of labor in putting it up really makes it the cheapest hot air pipe on the market.

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Some Ripe Experience

Has come to us through watching the doings of dealers throughout the United States.

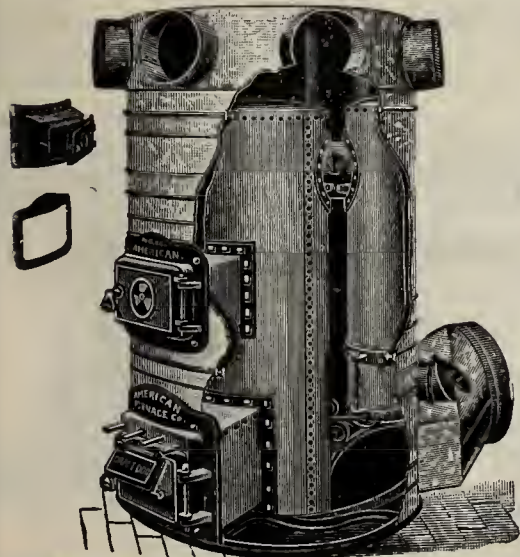
We find that the dealer who sells cheap furnaces not only loses ground in the furnace business but also has a falling off in his other lines.

On the other hand, we can say that the man who sells a good furnace and charges enough to do a good job will, in a few years, be the leading furnace man in his town and at the same time build up his other business.

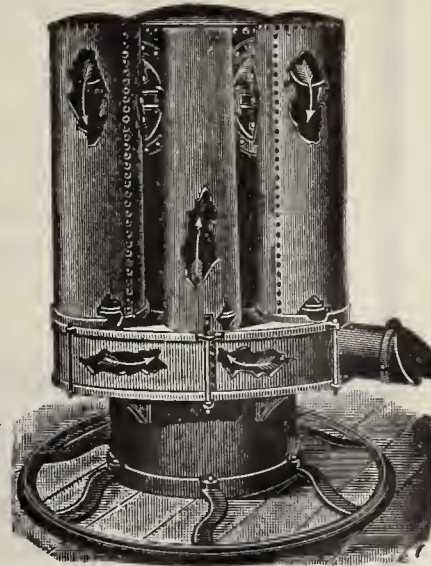
The *American Furnace* is made for the better class of trade; is durable, clean and economical in fuel.

The American Furnace Co.,

1911-13 PINE STREET, ST. LOUIS, MO.



Burn Hard or Soft Coal, or Coke. Large Doors.



Large Radiators, easy to clean out

Write for prices and secure the agency before the other fellow gets it.

The **WALKER** BOILER for Steam: for Water

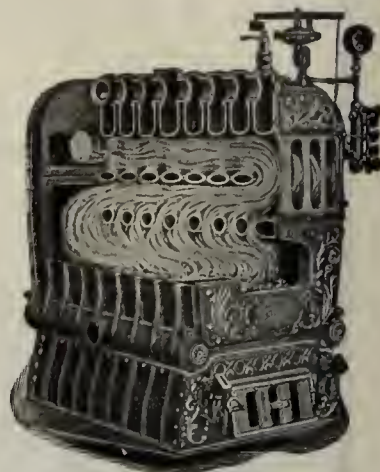
These boilers are made in 21 sizes for Steam and 21 sizes for Water, with heating capacities to suit almost any requirement. Every boiler sold is giving perfect satisfaction. Our "HONEST RATING" plan is popular. What's the use of saying that a 600-foot boiler will carry 1000 feet? The boiler refuses to recognize your table of capacities.

Honest ratings and fair prices are matters of interest to everyone. Will be pleased to send catalogue and discounts. Correspondence and inspection invited.

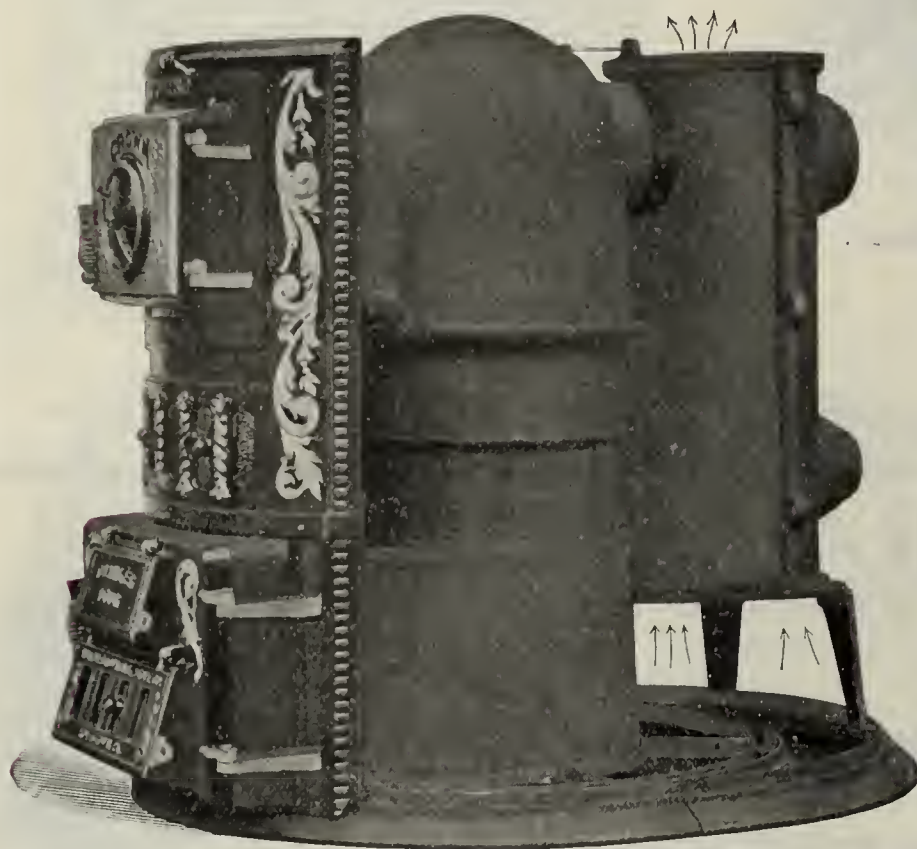
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31-35 UNION ST., BOSTON, MASS.

"Finest Factory in this line in the world."



WALKER BOILER.



CROWN FURNACES

All cast front.

For hard or soft coal.

Low-down type in four sizes.

Slightly oval in form.

Adapted for heating the finer class of dwellings.

Drums of heavy cast iron, absolutely dust, smoke and gas tight.

Castings extra heavy.

Deep sand joint and deep ash pit.

March-Brownback Stove Co.

POTTSTOWN, PA.

Four Combination Stores.

J. H. MORSE, L. A. SUTHERLAND.

MORSE CLOTHING Co., - - Madison, Me.

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W. R. PARKER CLOTHING Co., Ellsworth, Me.

OAKLAND, ME., June 9, 1902.

R. W. DRUMMOND, Esq., Fargo, N. D.

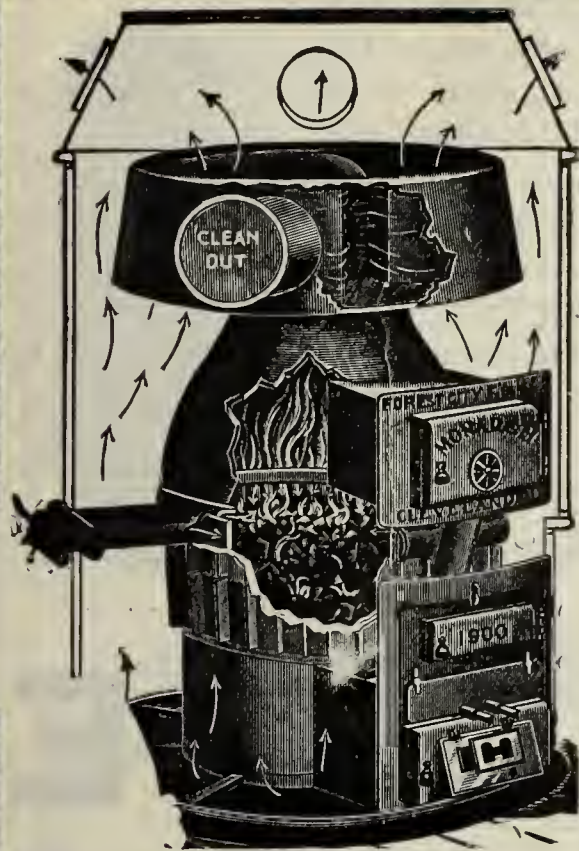
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It cost us \$62 to put the "**Dighton**" in and the same kind of a Furnace in any other make would have cost us from \$25 to \$40 more.

You will make no mistake if you invest in a "**Dighton**."

Yours truly,

J. H. MORSE.



Monarch Air Blast Furnaces.

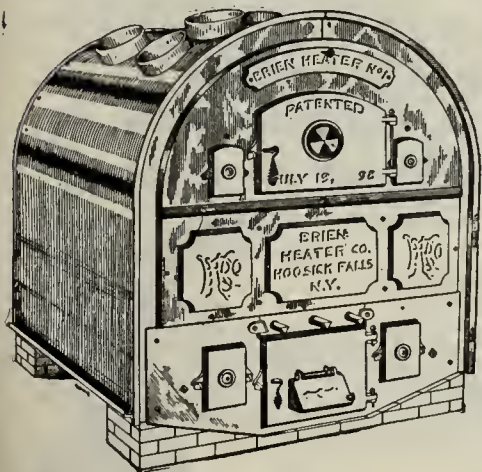
All Cast Iron.
For Hard and Soft Coal.

Send for 1902
Catalog and discounts.

The Forest City
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81 Elm Street,
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Gray Iron Castings to order. High
grade only.



Brien Heater.

A perfect, all cast WOOD or
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other Hot Air Furnace as
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Write for territory, catalog and prices.

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HOOSICK FALLS, N. Y.

SOFT COAL IS CHEAP FUEL

especially if properly burned
in the right kind of a furnace.

CANTON PERFECT BLAST FURNACES

Were BORN and BROUGHT UP in a SOFT COAL DISTRICT.

Write for facts and prices.

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BUFFALO DOWN DRAFT FORGES

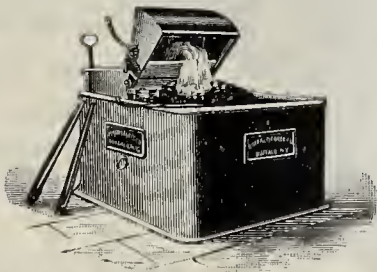
SIXTY TYPES AND SIZES.

Suited to the Heaviest and Lightest Work.



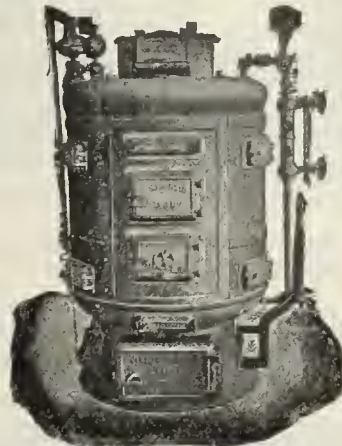
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No Repairs.
No Overhead Piping.

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Pierce BOILERS and RADIATORS

for Steam and Water Heating.



Pierce Improved Florida Steam Boiler.
LARGE HEATING CAPACITY.
ECONOMIC IN FUEL CONSUMPTION.

Endorsed by the foremost Architects
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Write for New Illustrated Catalogue.

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Boston.

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The Champion Hot Water Combination Heaters.

They Fit Any
Furnace.

Base section when
used without ring
sections



Ring Section,



These Heaters are made in five sizes diameter, and
from 100 to 700 square feet radiation capacity.
Will heat those cold rooms or an addition to the build-
ing. Will increase the capacity of any furnace. Are
cheaper than coils and will do more work.
Write for new circular. Manufactured by

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All that science, art and energy can
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"A B C" Vol-
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and Exhausters.

Adapted to a wide
variety of uses.

Send for data.



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NEW YORK. CHICAGO. LONDON.



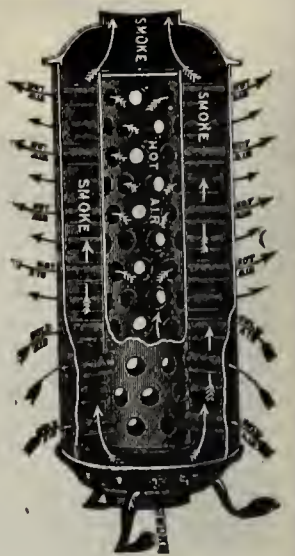
A Tea-Kettle Boils Quicker on my Chimney than on my Stove.

A fire in a red glow represents 1200 degrees of heat, a draft through this carries the heat out of the chimney unless intercepted by a cross tube **Rochester Radiator**, when nearly all this waste heat is conveyed into the room by the rapid circulation of air through the tubes and saved. This appeals to common sense and is verified by the most thorough scientific test.

The **Rochester Radiator** is a satisfactory article to sell and one that affords the dealer a good profit.

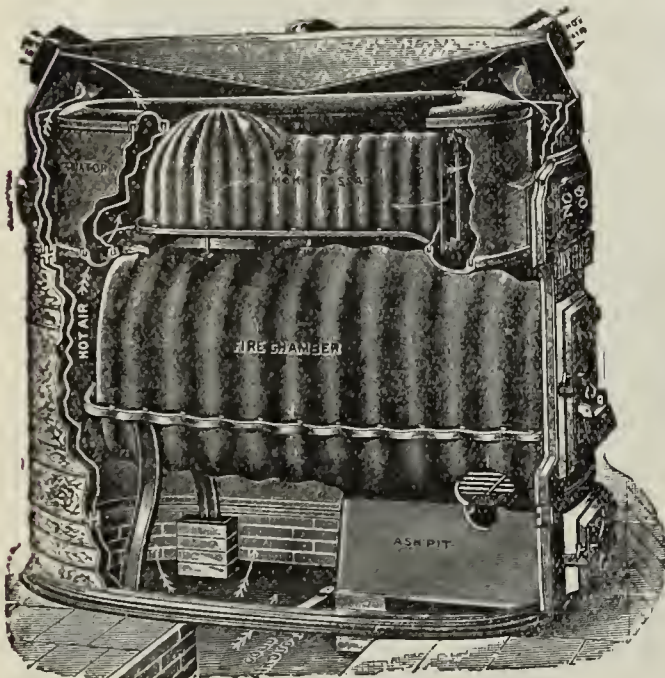
ROCHESTER RADIATOR CO.,

100 Furnace St., ROCHESTER, N. Y.



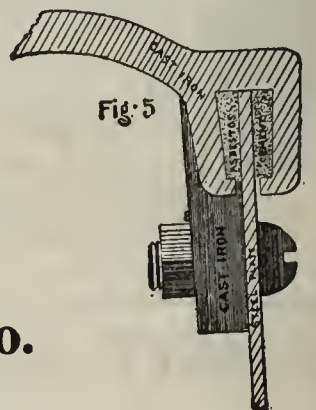
4,866 sq. ins.

GILT EDGE



stands for best when applied to furnaces. The many dealers who have installed and the thousands of householders whose homes have been heated by our furnaces show they like the Gilt Edge, as will be seen by the testimonials they have written. Let us send you a few of them.

The **Keystone Joint** used in Gilt Edge Furnaces is the only permanent gas tight steel and cast iron joint on the market.



R. J. Schwab & Sons Co.
MILWAUKEE

The Helios-Upton Co.'s

First on the Market. 150,000 Sold.



No. 420, with Projecting Lamina Cover.
3 inches in diameter.

STANDARD Oven Indicator

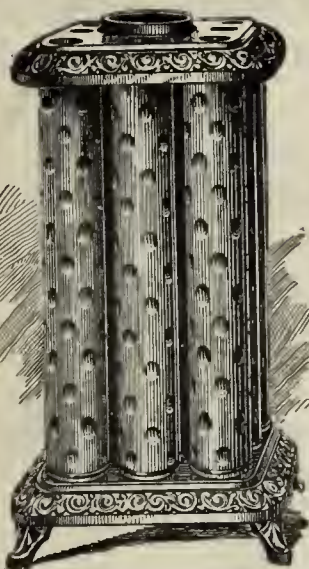
has a dial graduated in the simplest possible manner, as can be seen. This graduation was adopted because every oven has its own peculiarities, and an indicator adjusted to one oven might be incorrect for another. The *Standard* can be adjusted to any oven and has no complicated parts. Made in 3 styles.

Send for circular.

HELIOS-UPTON COMPANY,

HENRY GLEASON, Agent, 258 Broadway, N. Y.

Peabody, Mass., U. S. A.



COAL WILL BE HIGH.

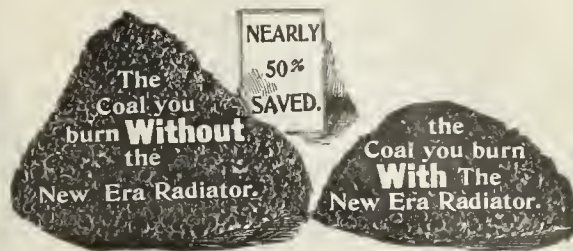
Don't you think if you can show your customers an article next fall that will enable them to get as much heat out of one ton of coal as they did last winter out of two tons, they will be glad to buy?

New Era Radiators

WILL DO IT.

Obtain full information early and be prepared to present facts and meet the demand.

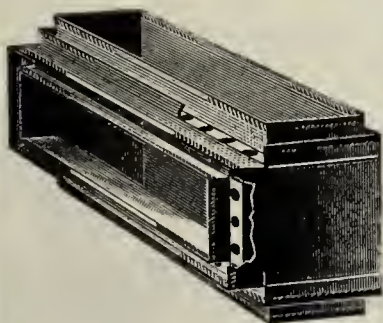
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EXCELSIOR HEATING SPECIALTIES

PIPE



Excelsior

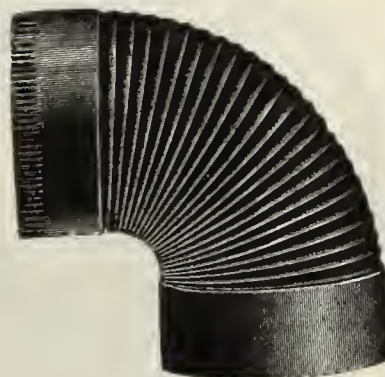
FURNACE PIPE,
HOT AIR REGISTERS,
STOVE PIPE ELBOWS,

ARE ALL SELLING AT

MUCH BELOW

their real value.

This is also true of many other things which we make, as our Quotation Sheet will demonstrate.



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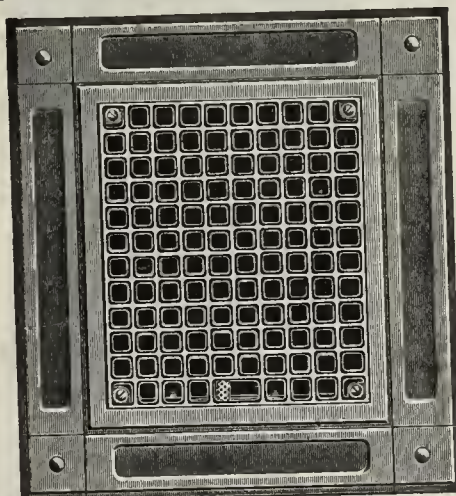
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EXCELSIOR STEEL FURNACE CO.
38-40 W. MONROE ST.-CHICAGO.

REGISTERS

H. & C. WROUGHT STEEL REGISTERS

FURNISHED WITH
WROUGHT STEEL
or WROUGHT BRASS
FACE PLATES, AND
IN ALL FINISHES.



STRONG, LIGHT,
HANDSOME in SIM-
PLICITY of DESIGN.

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REFRIGERATORS,
BLUE FLAME OIL STOVES,
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LARGEST JOBBERS
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GAS RANGES,
FURNACES, STOVES,
RANGES AND REPAIRS.

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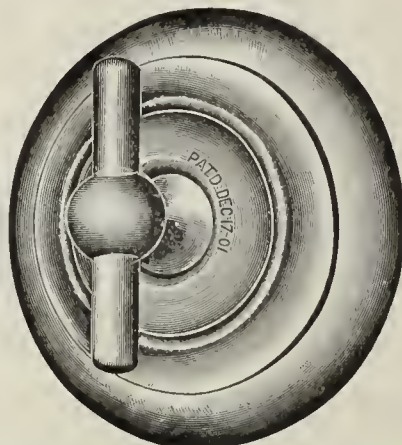
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NEW....**

Sheet Steel Draft Registers with Screws Complete.

PATENTED DEC. 17, 1901.

Threads are cut and
disk is securely
fastened
*Without cotter pins
or washers,*
Yet it is loose or tight
as wanted.

SEND FOR PRICES.



STOCK SIZES.

2½ in.	4 in.
3 in.	4½ in.
3¼ in.	4¾ in.
3½ in.	5 in.
3¾ in.	

Any size made to order
in quantities.

Manufactured
by

The H. A. MATTHEWS MFG. CO., Seymour, Conn., U. S. A.



ACME (THE HEIGHT OF PERFECTION)

The Acme Oven Thermometer is made in a first-class manner from start to finish. The case is composed entirely of steel, and is practically indestructible.

They are put up in separate boxes and sealed, making a nice, neat package.

This cut shows the indicator placed in the door panel. Our thermometers are made in two sizes, 3-in. dial and 2½-in. dial, and can be used on any gas or coal stoves and ranges. Write for sample.

**Evans Stamping and Plating Company,
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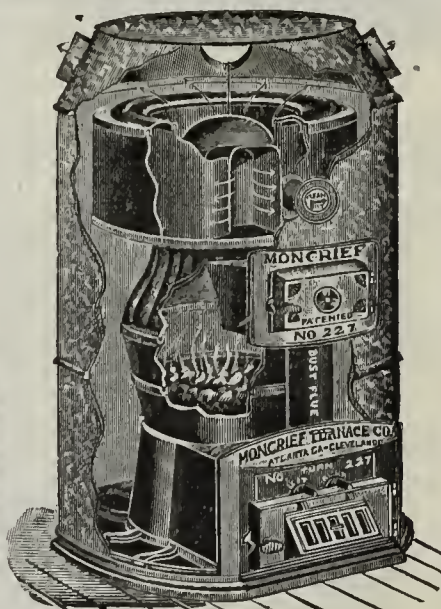
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Independent Registers

Are made in over one hundred sizes. Square, round, convex, circular top, round with square faces. Any finish. Prices always right. Shipments prompt. Write us.

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PORTABLE
and BRICK SET.

*Unequalled in the Great
Essentials---Simplicity,
Durability, Economy,
Capacity, Comfort,*

NO BETTER MADE.

Write for catalogue. Special price to the trade.

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**The MONCRIEF FURNACE &
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OHIO MICA CO., CANTON, OHIO.

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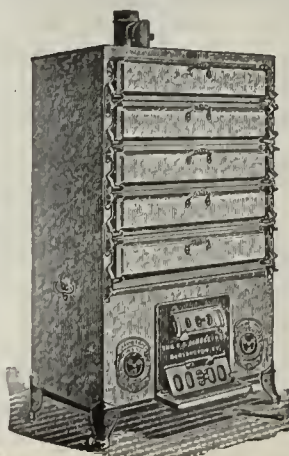
Ornamental and Stove Patterns.

*Sketches and Designs for Stove Work
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Correspondence Solicited.

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Portable OVENS

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CORE BAKING,

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OVENS FOR Bakers, Confectioners, Hotels, Etc.

Made in all sizes, single and double, for coal, wood,
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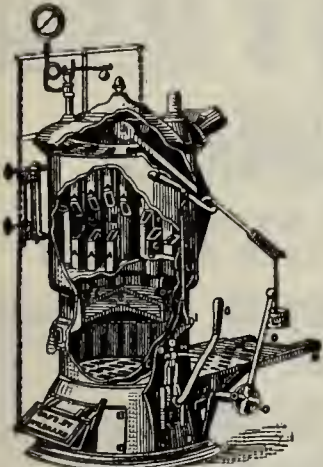
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RANGES COOKING AND HEATING STOVES
HOT-AIR AND COMBINATION AIR AND
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LAUNDRY STOVES CONFECTIONERS' STOVES
CABOOSE RANGES ETC ETC

STAMFORD CONN

Sectional View of the
TORRID
Fine Coal Burner



For Steam or Hot Water Heating.

This boiler is made on an entirely new principle and is

The Only Boiler

that will burn Pea or Buck-wheat Coal successfully.

SAVES TIME. SAVES MONEY.
RESULTS UNEQUALED.

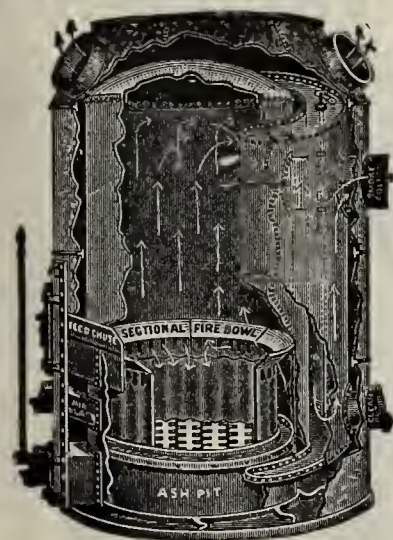
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Factory: Hackettstown, N. J.

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is a trade winner because it has points of merit peculiar to itself that can be found in no other steel furnace. Our new catalogue is now ready to mail and a description of our Hot Air and Hot Water Combination Furnace can be seen in it. We furnish either the cast iron lining or the fire brick at the same price. Our Wood Furnace is called a powerful heater by those who use it.

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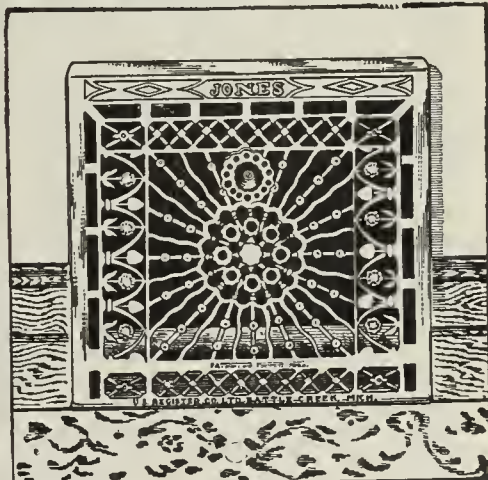
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MARSHALLTOWN, IOWA.

HEATING BY COMBINATION STOVES AND FURNACES.

Suitable for Large or Small Houses, Stores, Conservatories, Barber Shops, Hotels, etc., etc.

Heat Water Quickly.
Circulation is Positive.
No Joints Inside to Leak.

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CASTER TRUCK**

MOUNTED
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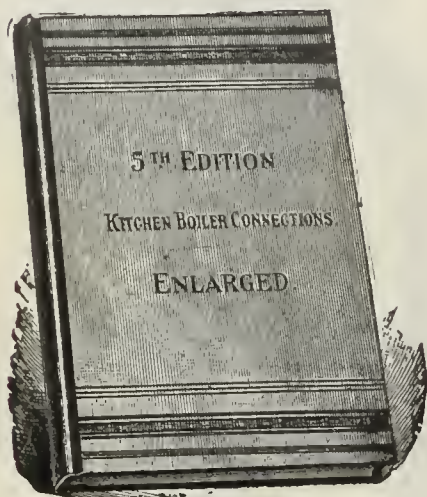
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**PATENT AIR
TIGHT BAKER
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Write for particulars.

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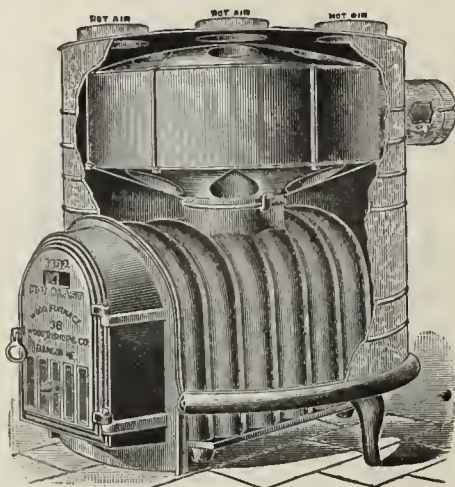
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a practically indestructible casting, heavily corrugated to stand the strain.

HAVING IMMENSE AREA OF RADIATING SURFACE—

all directly exposed to the heat of the fire, giving great heating capacity even when fire is low.

MADE IN A WOOD SECTION,

where wood is burned practically—not theoretically.

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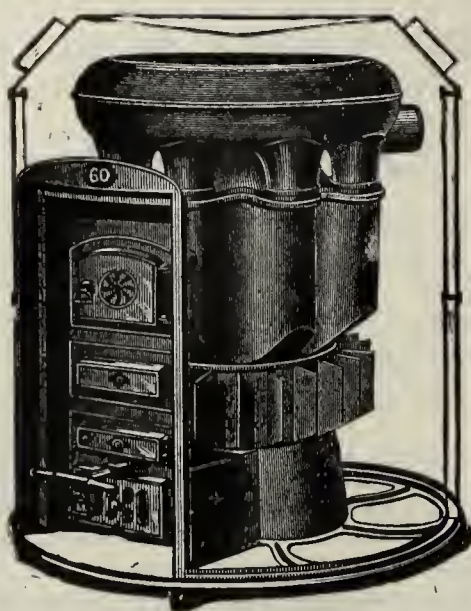
Our Low Priced HOT BLAST,

3 sizes, PORTABLE OR BRICK SET.

Thousands in use in all sections of the country.

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Imitation is Flattery.

Cory's All Cast FURNACES

HAVE BEEN COPIED
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An Absolutely Gas Tight Furnace
Without Bolted Joints.

UZAL CORY & CO.

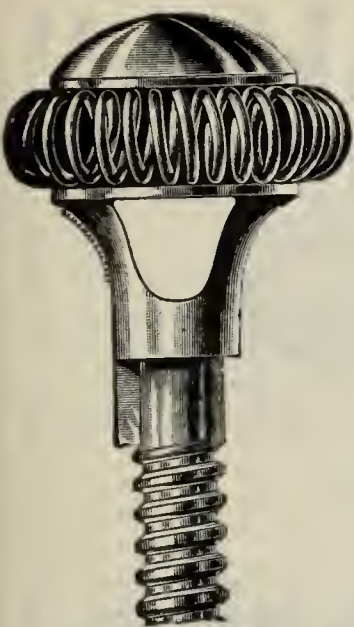
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Established 1847.

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No. 346 Draft Register.

No. 520 ZERO Screw
Knob.

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Successors to W. F. GREENE.

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M. D. VALENTINE & BRO -**FIRE BRICK****WOODBIDGE. N. J.****WATER FRONTS.**

Try us, we have the Stock.

Our price is right.

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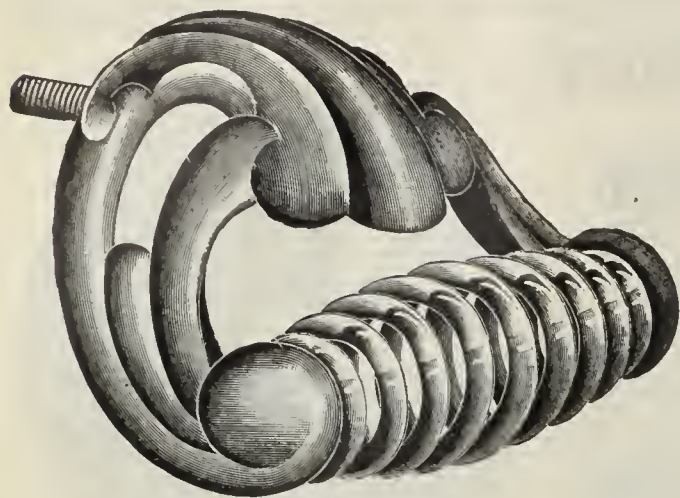
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MICAEUGENE MUNSELL & CO.
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218 WATER ST. 117 5 112 LA

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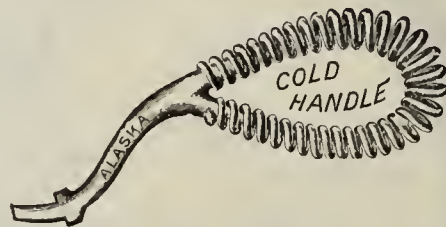
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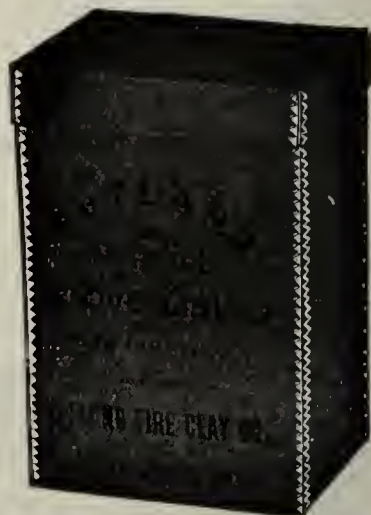
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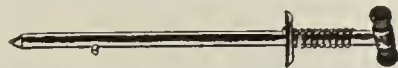
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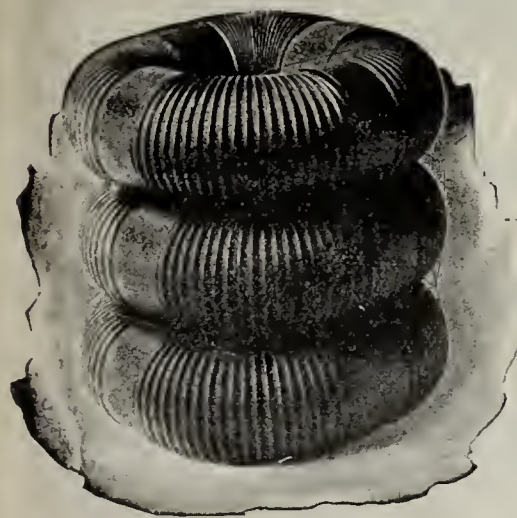
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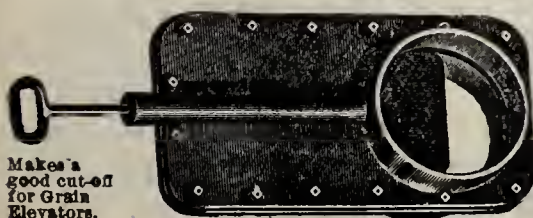
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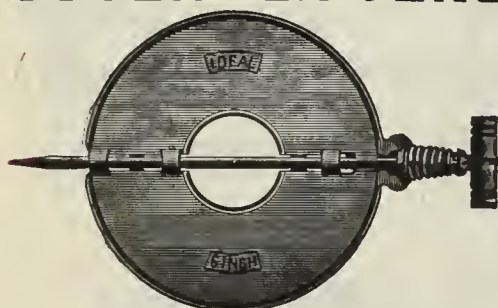
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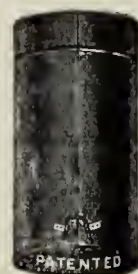
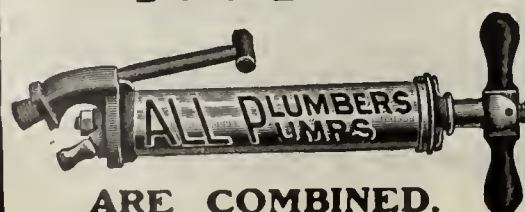
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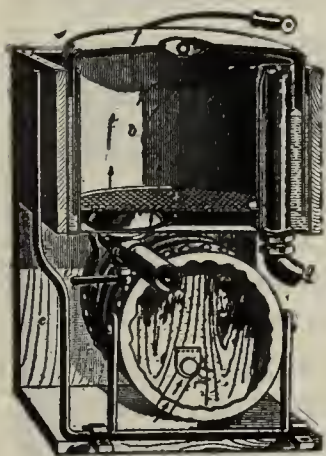


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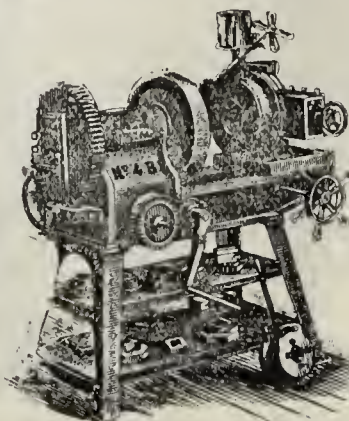
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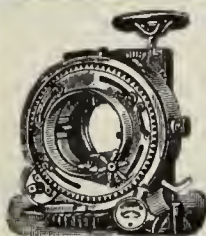
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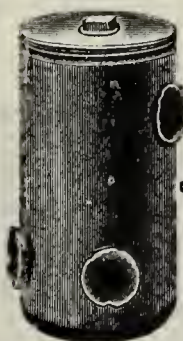


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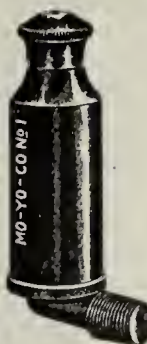
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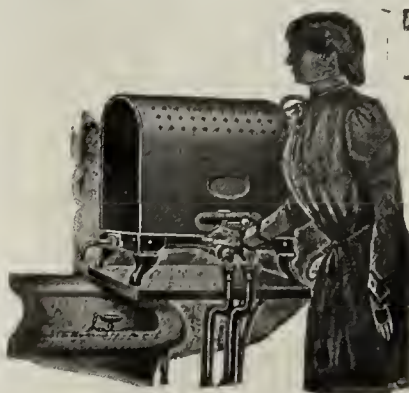
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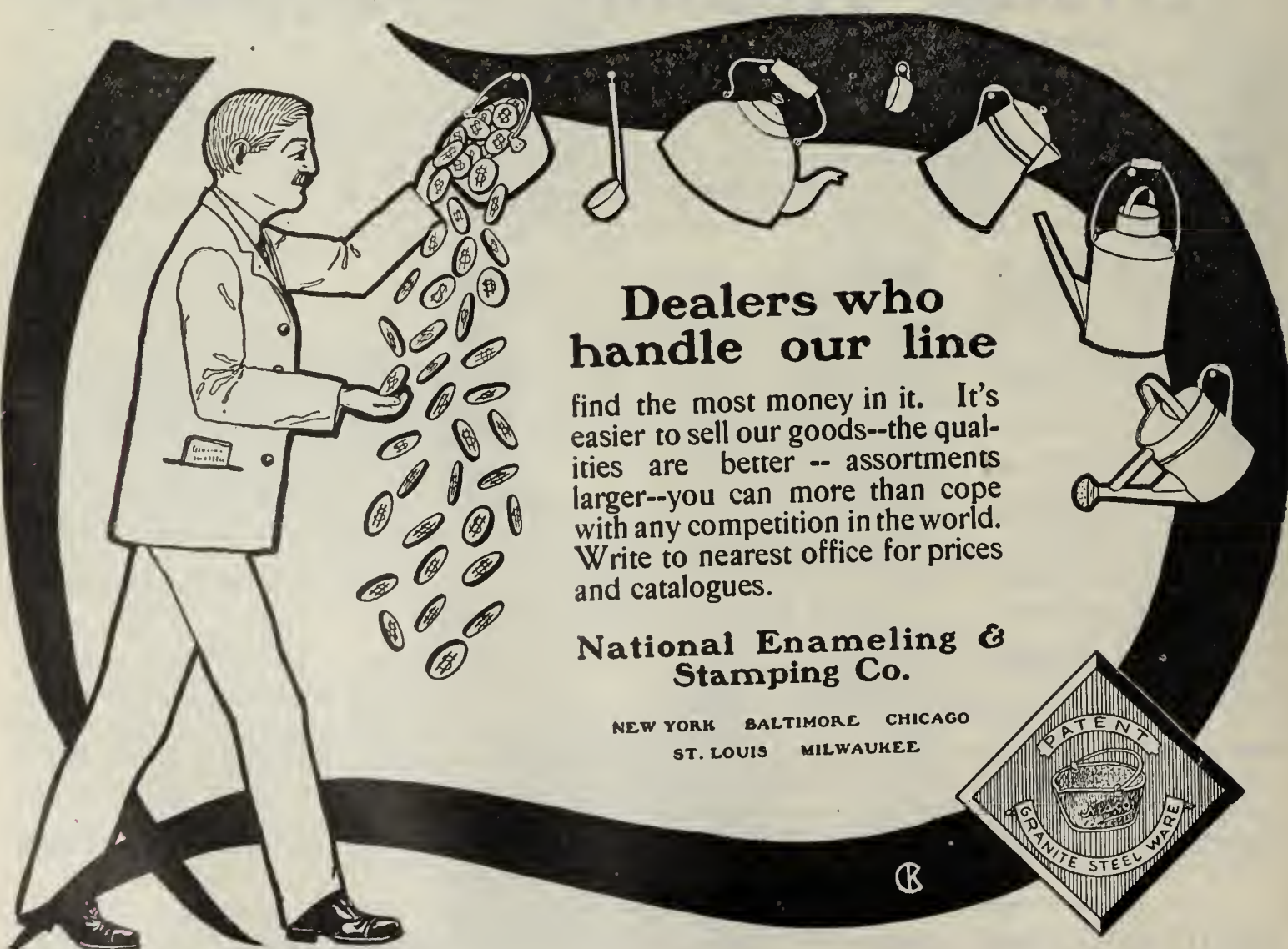
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Volume LVIII.....No. 2
Index to Reading Matter.....Page 59

A Strong Iron Market.

In spite of the blowing out and banking of a number of blast furnaces in the East, in Virginia and in the Ohio Valley, caused by the shortage of fuel supplies, the active pig iron producing capacity of the country on July 1, according to the statistics of *The Iron Age*, was larger than it has ever been before. It is explained that this is due to the fact that a number of large plants, notably in the Central West, have resumed after the short strike of the furnacemen in the Valleys. There were in blast on the first of this month pig iron furnaces whose aggregate capacity amounted to 352,590 tons per week, as against 344,748 tons on June 1, and 352,064 tons on May 1, the previous highest record. Considering all the circumstances of strikes and fuel shortage, the record of June, with an output of 1,478,456 tons of pig iron, was a good one. If everything goes well the July production should go considerably above the 1,500,000-ton mark. At the same time the anthracite coal strike is still troubling some of the Pennsylvania furnaces, and complaints are becoming more frequent and more urgent that the coke makers who are running are not able to keep their customers regularly supplied. Notwithstanding the very large current production of pig iron the output is still considerably below the capacity of the country. Furnace stocks are at an almost insignificant point and importations of foreign iron for consumption in the East are going on steadily.

Nearly all the trouble in the pig iron market thus far has fallen upon the makers of foundry iron and the founders are meeting with serious difficulties. While there is some scarcity of pig iron for steel manufacture it does not involve any serious shortage, and the great mills have experienced little inconvenience so far from that source, particularly as the summer slackness is causing a shutdown of a number of the mills that are large users of steel. Foundry iron for prompt and early future delivery is practically unobtainable, and such small lots as are offered are quickly snapped up by consumers at fancy prices. Taken all in all, the first six months of 1902 broke all records in the iron trade, both in tonnage and profits, and manufacturers would probably ask nothing better than a continuance of the same conditions in the latter half of the year. From the present outlook it would seem that their wishes in this regard are likely to be fulfilled, for, unless all signs fail, the last six months of 1902 are likely to be just as good in regard to both the volume of business and the mar-

gin of profit as the first half of the year. Meanwhile, the high price and scarcity of foundry iron are likely to exert an advancing influence upon the price of all goods into the manufacture of which iron enters, and this will be an important factor in the markets for many of the products in which the readers of *The Metal Worker* are especially interested. There is no reason to suppose that there will be any decline in the price of iron this year, and probably not in the first half of 1903.

The Acetylene Convention.

The manufacture of apparatus for illuminating and other purposes using acetylene gas has assumed considerable importance of late, and the past year's meetings of the manufacturers engaged in this line of business have brought together a considerable number of men representing large capital, resulting in the formation of an Association of Acetylene Goods Manufacturers. Preparations are now being made for holding, in Chicago on August 10 to 16, the annual convention of this association. Heretofore it has been customary, after the transaction of the regular business, to discuss papers prepared by different members, covering not only the scientific construction and operation of the apparatus, but also methods for extending the sale of apparatus for generating acetylene gas for illuminating buildings from the small suburban cottage to the largest hotel. At this year's meeting increased interest will doubtless attend the discussion of the lighting by this medium of small towns and villages. Reports indicate that not only has the carbide from which the acetylene is generated been produced in larger quantities, but also that the demand has shown a magnificent increase. This is largely due to the satisfactory operation of acetylene apparatus, whether small lamps for reading tables or generators and systems for residences and hotels, as well as the more extensive plants for lighting whole villages. The simplicity of operation, the ease of management and the satisfactory character of the illuminant have been so fully demonstrated that the period of introduction seems to be practically past and the natural demand, due to the excellence of acetylene gas, is repaying all who have expended effort and shown enterprise in this branch of industry.

Plumbers' Day

The plumbing trade is to be congratulated on the unanimity of feeling throughout the country that an outing at least once a year is a desirable custom as affording to the plumbers an opportunity for meeting in a social way under the pleasantest conditions. The master plumbers' associations in various centers of the East have found Saturday to be a good day for an outing, and it is not uncommon at this season to see in the show windows of plumbing shops cards announcing that a certain Saturday, or some other date, will be observed as "Plumbers' Day," when the shop will be closed. On these occasions the master plumbers, and in many instances some of their journeymen, find their way to some convenient spot for a day's enjoyment. While a good dinner is by no means the least important feature of the event and no small enjoyment is derived

from the various games and contests, the greatest benefit comes from the social meetings. The outing often provides an opportunity for the explanation of annoyances or the removal of some of the ill feeling that occasionally follows competition for some important piece of work. These outings are also well attended by salesmen from the supply houses, and through the acquaintance thus made when free from all the constraints of business a better understanding is established in the trade that prevents much of the friction that is apt to arise in the course of business transactions. In many places the people have grown familiar with the custom and building contractors and private individuals alike adjust their requirements so as not to interfere with this excellent and growing custom of the trade. In some sections Plumbers' Day is now an old institution, and is looked forward to with pleasure as an occasion for the renewal of old friendships and the making of new acquaintanceships. Moreover, it is often used as an opportunity for State officers to do good work for their associations, and invitations to members of nearby associations have led to an interchange of such courtesies which has been more far reaching in its beneficial effect than was ever anticipated. In view of the renewed vigor with which business is resumed after a well spent outing no loss has been found to attend the well earned holiday. The whole plumbing trade would do well to arrange to enjoy one such day of relaxation from business every year.

End of the Illinois Anti-Trust Law.

The last vestige of the Illinois anti-trust law was recently declared unconstitutional by a local court. Suits involving a total of \$10,000,000 had been instituted by the Attorney-General of the State to collect fines for violation of the law requiring affidavits from corporations that they are not a party to any pool, trust or combination. A section of the anti-trust statute of 1891 prescribed that such affidavits should be filed annually by corporations with the Secretary of State under penalty of a fine of \$50 for each day of delay after a certain date. For years this law was practically a dead letter. Corporations were regularly notified by the Secretary of State that such an affidavit was expected, but if it was not forthcoming no proceedings were taken to punish the delinquents. About 1897 and 1898 the formation of a number of consolidations caused an awakening of the dormant apathy to trusts, and the State officials decided to make an attempt to enforce the law. In 1899 attorneys for the State began no less than 1200 suits in the city of Chicago alone to recover fines from corporations refusing or neglecting to make the prescribed affidavit. The Illinois Manufacturers' Association undertook the defense of their members who had been sued, but it was not until the past month that any of the cases came to trial. Meanwhile the United States Supreme Court had decided in other cases brought to test the Illinois anti-trust law that it was unconstitutional, because it discriminated between parties subject to its provisions. This ruling has just been held by the Illinois court to apply with equal force to the section of the law imposing fines on corporations for their failure to file affidavits as above set forth.

The principle seems to be clearly established by these decisions that legislation against pools, combinations or trusts must be general in its character to stand the test of constitutionality. The courts will not sustain attacks on corporations simply because they are corporations. The corporate form of conducting business operations, whether large or small, is not only strictly legal but has

existed so long and is so thoroughly interwoven into our business fabric that the popular prejudice against it is unreasonable. It is the existence of this prejudice which is responsible for much of the anti-trust legislation which has been annulled by the courts. Individuals, partnerships and labor organizations are almost invariably exempted from the pains and penalties of anti-trust laws. They can enter into pools, combinations and agreements which may have a most serious effect in bringing about restraint of trade, and anti-trust laws have no terror for them. This, however, will not be countenanced by the courts, and hereafter corporations must be considered by law-making bodies as entitled to equal rights with individuals, partnerships and labor organizations.

A Half Year's Fire Loss.

The fire loss of the United States and Canada in the first half of the present year continues the heavy record which has characterized it during the last two or three years, amounting to no less than \$87,105,850, or an average of over \$14,000,000 per month. The losses for the corresponding period of 1901 amounted to \$88,926,150, and in the first six months of 1900 to \$103,298,900. While the figures for 1902, so far, are slightly better than those for the corresponding period of last year, when the total was materially swollen by the great conflagration at Jacksonville, as the record for the preceding year was enlarged by the Hoboken disaster and several unusually great fires which occurred in that period, the present year's losses are deplorably great. The continuance of such heavy losses, in spite of all the efforts of the fire departments, with their modern equipment, is a fact to be lamented. That between \$150,000,000 and \$200,000,000 worth of property is wiped out annually by fires, many of which must have been preventable, should secure some action by the city authorities and the fire insurance companies, with a view to the stricter enforcement of building laws and the encouragement of a more extended use of fire proof materials in the construction of new buildings. The past few years have been disastrous ones for the fire insurance interests, and it would seem to be time for those companies to exercise a stricter supervision, not only in their own interests, but also in the interests of the different communities in which they do business. A number of the weaker fire insurance concerns have gone under in the past two or three years by reason of their heavy losses; but those that are left are surely strong enough to carry out any salutary measures that may be decided upon in the interests of more effective fire protection in American cities and towns.

Commerce between the United States and its newly acquired territories is growing with remarkable rapidity. In 1897, the year preceding that in which Porto Rico, Hawaii and the Philippines came under the American flag, the total shipments to those islands, according to the figures of the Treasury Bureau of Statistics, amounted to \$6,773,560. In the fiscal year ending June 30, 1901, they were over \$30,000,000, and in the fiscal year just ended they will be, according to such figures as the Bureau of Statistics can obtain, fully \$35,000,000. To this may be added the estimate of \$15,000,000 on shipments to Alaska last year. This would bring the total sales of American goods in the noncontiguous territory of the United States up to about \$50,000,000 for the last fiscal year, against about \$10,000,000 in that same territory in 1897. On the import side the same territory of the United States is now supplying about \$50,000,000 worth per annum of their products for use in the United States.

MEETING OF SOUTHERN STOVE MANUFACTURERS' ASSOCIATION.

ADVANCE IN PRICES.

An important meeting of the Southern Stove Manufacturers' Association was held at the Read House, Chattanooga, Tenn., on July 2, when several matters of trade interest were considered. The gathering was one of the largest ever held by the association, the meeting being attended by practically all the leading stove manufacturers of the Southern district. Among those present were the following:

Otto Agricola, Agricola & Jones Mfg. Company, Gadsden, Ala.
Joseph Bower, Avondale Stove Company, Birmingham, Ala.
J. P. Bowle, Rome Stove Works, Rome, Ga.
J. E. Fair, Fair Foundry Company, Knoxville, Tenn.
H. D. Gibson, Chattanooga Stove Company, Chattanooga, Tenn.
F. D. Griffith, Southern Foundry & Machine Company, Knoxville, Tenn.
J. D. Hanks, Hanks Foundry, Rome, Ga.
H. H. Hedden, Mountain City Stove Company, Chattanooga, Tenn.
C. C. Hunnington, H. Wetter Mfg. Company, Memphis, Tenn.
B. H. Jones, Atlanta Stove Works, Atlanta, Ga.
Sam D. Jones, Atlanta Stove Works, Atlanta, Ga.
John McClean, Avondale Stove Company, Tennessee.
J. H. McClure, Phillips & Buttorf Company, Nashville, Tenn.
D. C. McLaine, Union Stove Works, Dalton, Ga.
A. Randle, Southern Co-operative Company, Rome, Ga.
A. D. Reynolds, Enterprise Stove Company, Bristol, Tenn.
D. R. Saunders, Standard Stove Works, Fort Payne, Ala.

The Lizzie Lowman Stove Works and the Sheffield Stove & Foundry Company, both of Sheffield, Ala., were

still further advance in prices should not be regarded as a surprise.

HINTS TO FURNACEMEN—THE NEW CREED.

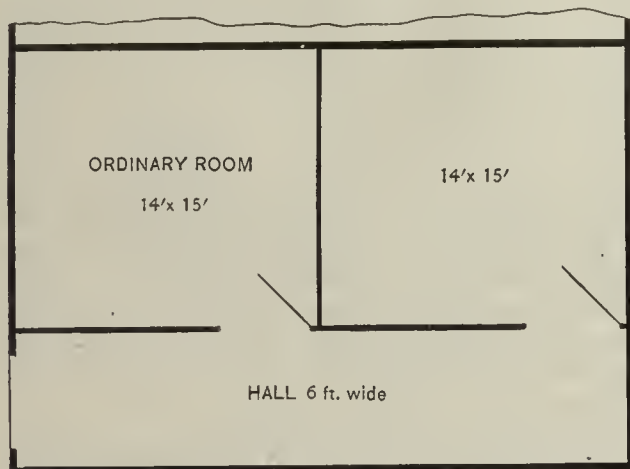
BY W. R. M.

"Ventilation Practically Considered" is the title of a solid mass of information in *The Metal Worker* of December 12, 1896. It emanated originally from Roger I. Wade, Chief Inspector of the State of Massachusetts, and I quote from it these texts with the recommendation that the readers of *The Metal Worker* overhaul their files and peruse the entire article.

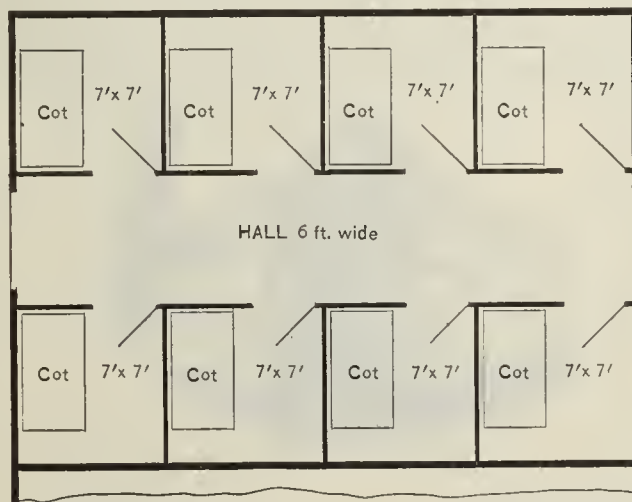
"Experience and careful observation have made clear that it must be determined by the number of persons to whom air is to be supplied."

"Whether the room is large or small, the ceiling high or low, the quantity of air in the room is of little moment when compared to the whole quantity required when the room is occupied. The best authorities tell us that not less than 30 cubic feet of air per minute is required for each person to maintain even a reasonable degree of purity."

It seems to the writer that this doctrine is particularly applicable to rooms containing only one person, as, for instance, in isolation hospitals or pest houses. In these days it is not uncommon for persons having small pox to travel a number of miles to a pest house or isolation hospital, and the sufficient reason for this is be-



THE METAL WORKER



THE METAL WORKER

Fig. 1.—Section of Floor Plan Divided into Two Rooms. Fig. 2.—Same Floor Area Divided into Eight Rooms of Uniform Size.

HINTS TO FURNACEMEN.—THE NEW CREED.

not represented at the meeting, but telegrams were received from them to the effect that they would be controlled by whatever action was taken by the convention. With these there remains only one active foundry in the Southern district which is not a member of the association.

The question of prices was considered, and it was decided to make an advance of 10 per cent. in the price of stoves, to apply to all territory south of the Ohio and Potomac rivers. We understand that this course was adopted by reason of the recent rapid advance in the cost of coke and iron and also in the price of labor. There was no opposition to the advance in stove prices, as all present seemed to think the increased cost of manufacturing fully justified the action of the meeting. The entire morning session was spent in discussing the cost of labor and material.

In the afternoon the same subjects were considered and officers for the ensuing year were elected as follows:

President, J. P. Bowie of Rome, Ga.

Vice-President, C. C. Hunnington of Memphis, Tenn.

Secretary, A. Randle of Rome, Ga.

The meeting adjourned at 6 o'clock in the evening subject to the call of the chairman. It was intimated after the adjournment that, in view of the tendency of prices in the iron market and the condition of labor, a

cause of the cost of construction of hospitals and because the village or borough is unable to provide the proper building. In view of this state of affairs the writer suggests a compartment system of isolation as the most economical obtainable. As indicated in the foregoing text, the dimensions of the room are of little or no moment, and if we economize in floor space we consequently economize in ground space, building materials and in the capacity of the heating and ventilating apparatus as well as in the greater number of patients cared for on a given amount of floor space.

Referring to the sketches which I inclose, Fig. 1 represents a section of a floor plan, 20 x 28 feet, divided into two rooms each 14 x 15 feet in area and with a hall 6 feet in width. In Fig. 2 is shown a portion of a floor plan of the same dimensions divided into eight compartments 7 x 7 feet in area and arranged both sides of a hall 6 feet in width. With these provisions and thus isolated, patients suffering from various contagious diseases and in different stages of the same disease would be much more comfortable. The walls of the room should be faced with tile, or other nonabsorbent material, which would be easily kept clean. The heating and ventilation would be an easy problem, but it must be efficient or the scheme is spoiled. The Thunder Mug No. 9 would supply the air, and an aspirating flue or a fan would secure the exhausts.

Air Supply Required in Cold Air Duct.

10,000 cubic feet of space to be heated	requires	250 square inches.
12,000	"	300
14,000	"	348
16,000	"	432
18,000	"	450
20,000	"	498
24,000	"	600
28,000	"	699
32,000	"	798
40,000	"	1,000
50,000	"	1,248

Now that we have the proportions for the furnaces, grates and cold air ducts for the several sizes of buildings, the next thing is to proportion the warm air pipes for the different rooms. To do this you will apply the following rules:

HEAT PIPE AREA FOR DWELLING HOUSES.

For rooms on the first floor having a moderate exposure divide the volume of the room in cubic feet by 30, or by 25 to 20 for rooms having great exposure. For second-floor rooms the divisor may range from 35 to 25, and for third-floor rooms from 40 to 30.

A more accurate method is to proportion the area of the pipes to the cooling surfaces in the rooms. This may be done by the following rule: For rooms on the first floor add together the total glass surface and one-fourth of the area of the exposed walls in square feet, and multiply the total by 1.5. The product is the proper area of the pipe in square inches. For second-story rooms multiply by 1 to 1.25, according to the exposure; and for the third story by 0.75 to 1.

Another method is to divide the entire cubical contents of the building by 30. This gives you, in whole numbers, the amount of warm air pipe area required to heat the building. Then, of course, you have to proportion the warm air pipes according to the sizes of the different rooms. Be careful to make the combined area of the pipes equal to the amount obtained by dividing by 30.

FOR SCHOOLS, HALLS, CHURCHES, Etc.

Having found the quantity of air required per minute the size of the pipes may be computed by dividing the required volume by the velocity of the air current. In all ordinary cases this may be safely assumed at 4 feet per second at the first floor, 5 feet at the second floor and 6 feet per second at the third floor. Another method, equally good, is to assume that 1 square inch of stack, or flue, area will supply 100 cubic feet of air per hour at the first floor, 125 at the second and 150 at the third floor. It is assumed in the foregoing rules that the average temperature of the warm air in the flues is about 140 degrees, and that the air is moved solely by natural draft.

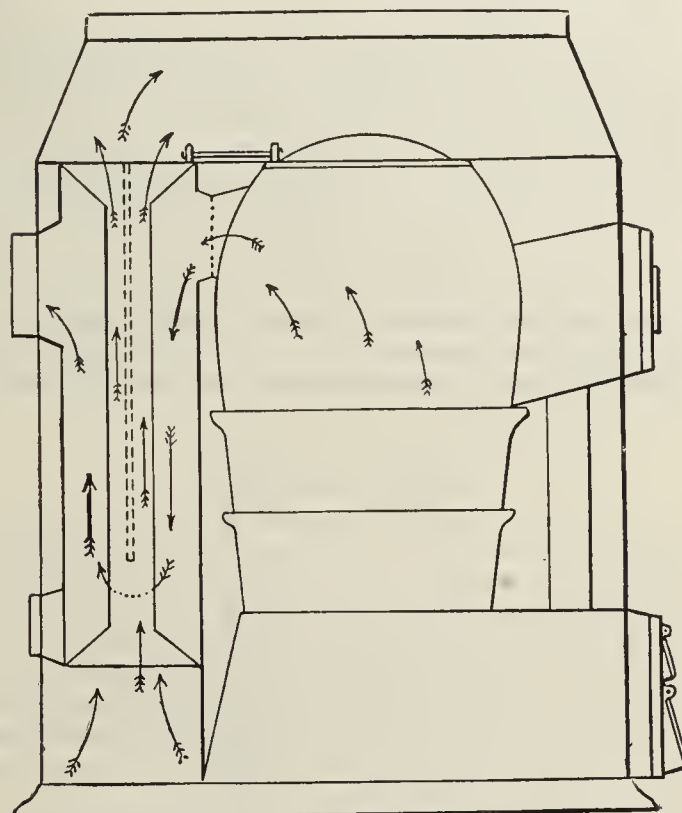
Reliable Ranges and Heaters.

Conforming in its general composition and mechanical make up to the excellent style of trade publication usually issued by the Schneider & Trenkamp Company of Cleveland, Ohio, and Chicago, Ill., is a catalogue of 68 pages, illustrating and describing the Reliable steel ranges and combination coal and gas ranges, which this enterprising concern manufacture in great variety. The opening pages call attention to the special features of the Reliable goods, prominent among which are the corrugated sectional fire box linings, removable front, end lining plate, new grate frame and removable grate door. All ranges are furnished with bodies made of Wood's polished steel or Japan finished, while the top is in one piece, which the manufacturers claim will not crack from the heat. All flues and plates are lined with sheet asbestos, with 2-inch air space and two thicknesses of asbestos underneath the bottom oven plate. The claim is made that this construction thoroughly protects the floor from oven heat and the cold air from striking the oven plates. The Reliable ranges are fitted with balance drop oven door, cast iron flue at the back, duplex grate and other features which cannot fail to command the careful attention of the wide-awake dealer. Directions for ordering ranges are presented, together with a great deal of interesting information for the dealer. Various pages are devoted to steel range repairs, and in conclusion attention is given to the Reliable combination gas and coal ranges.

The company have also sent out a 64-page pamphlet, of a size convenient to carry in the pocket, relating to Reliable gas heaters, including sheet iron cylinder stoves, open front constructions, parlor gas grates, gas radiators, burners, &c. A third publication relates to the Reliable oil heaters, which are offered in several styles and sizes, some of the goods being provided with a handle or bail so that a heater may be moved from room to room or from one location to another in the same apartment. The company refer especially to their No. 553 as the latest addition to their oil heater line, and to the fact that all parts are stamped from extra heavy steel. Still another pamphlet illustrates and describes the Reliable circulating water heater, the engravings showing it in sectional view and also connected to an up-right boiler.

The Crown Low Down Warm Air Furnace.

A recent addition which the March-Brownback Stove Company of Pottstown, Pa., have made to their already extensive assortment of heating specialties is the Crown furnace of the low down type, a skeleton view of which is presented herewith. It is made in several sizes of such capacity as to adapt it for heating dwellings ranging from five to six rooms and containing 10,000 to 25,000 cubic feet, up to those containing from 11 to 14 rooms and from 45,000 to 65,000 cubic feet of area. The furnace is made with double casings, having asbestos



The Crown Low Down Warm Air Furnace.—Skeleton View.

felt between so as to prevent radiation into the cellar. The skeleton view shown herewith shows the drum attachment with the inside warm air flue and buffer plate between the inner and outer walls for directing the heat to all parts of the drum for radiation. The manufacturers state that the combined inner and outer surface of this drum for radiation is unusually great, thus making the furnace unusually powerful in operation, while the general construction is such that no expert is required to clean it. In connection with the cold air supply to the Crown furnace a frame is employed especially adapted for use in wet cellars or where it is objectionable to use a cold air trench under the heater. Galvanized pipe is used to run from the cellar window inlet over the cellar floor to the rear or sides of the heater at the bottom to connect with this collar, which is simply riveted to the galvanized casings and the galvanized iron is cut out. The company state that this is fast becoming a very popular method of supplying cold air to the furnace, and that it has the advantage of being easily made and much less expensive than a brick trench, while at the same time it is more easily cleaned and less affected by dampness.

WESTERN STOVE PRICES ADVANCED.

The Western Association of Stove Manufacturers met in Chicago on July 8, the result of the conference being an advance of 5 per cent. in the prices of all stoves. The reason assigned for the advance is the sharp advance in the prices of pig iron and other raw material. There was a strong disposition to advance prices 10 per cent., but it was thought best to pursue a conservative course, especially as the crop outlook is as yet uncertain. In view of the further advance in pig iron during the past few days, however, it would not be surprising if another 5 per cent. advance were made within the near future.

THE STOVE FOUNDERS' DEFENSE ASSOCIATION.

An agreement has been entered into between the Stove Founders' National Defense Association and the Metal Polishers', Buffers', Platers' and Brass Molders' International Union. The agreement provides that all disputes shall be referred to the arbitration of the presidents of the respective associations. Should they fail to agree, the dispute will be carried to a conference board of six members, three employers and three employees. The agreement is similar to that which now exists between the Founders' Association and the Iron Molders' Union, which has prevented strikes in that industry for 15 years.

The Iron Molders' Union of North America, now in session at Toronto, Canada, has requested the Stove Founders' National Defense Association to appoint a committee to meet a similar committee of the Iron Molders' Union in conference regarding an increase in the ratio of apprentices. The committee appointed by the Defense Association is as follows: C. H. Castle, Quincy, Ill.; Thomas J. Hogan, Chicago; Henry Cribben, Chicago; J. Dwyer, Detroit; E. W. Peck, Rochester, N. Y., and D. Macafee, Quincy. July 15 is the date fixed for the conference. Thomas J. Hogan, secretary of the National Defense Association, will visit Philadelphia and New York upon business connected with the association en route to Toronto.

ODD PLATES.

THE PECK-HAMMOND COMPANY of 309 West Fourth street, Cincinnati, Ohio, call attention to the great economy in the consumption of fuel resulting from the use of their Winner Down Draft Oak Stove, which was recently illustrated in these columns. They state that customers who have demonstrated its merits report that it does not consume more than one-half the amount of fuel necessary for an ordinary Stove, and that in some cases the figures show a consumption of fuel as low as one-third of the usual amount.

THE S. OBERMAYER COMPANY, manufacturers of Foundry Equipment and Supplies, have recently outfitted the following foundries completely: Peck-Williamson Heating & Ventilating Company, Wellston, Ohio; Superior Gas Engine Company, Springfield, Ohio, and the Laidlaw-Dunn-Gordon Company, Cincinnati, Ohio. In the equipment was included the Cupolas, Ladles, Tumblers, Foundry Facings and Supplies of all kinds. The new technical foundry for instruction at the Armour Institute, Chicago, also was recently equipped by the S. Obermayer Company.

CAREY A. MOORE, who represents Rathbone, Sard & Co. of Albany, N. Y., in the South, with his headquarters in Baltimore, has been enjoying a vacation in Canada, acquiring new energy for pushing the Acorn line of Stoves and Ranges this fall.

THE READING STOVE WORKS, Reading, Pa., operated by Orr, Painter & Co., will make some improvements, \$100,000 of preferred stock having been subscribed. The works have had a very busy season.

THE STEIGER & KERR STOVE & FOUNDRY COMPANY, San Francisco, Cal., have purchased a lot at Eighteenth and Folsom streets, upon which they are erecting a mounting and storage building, 50 x 150 feet; two foundry buildings, 50 x 130 feet each; carpenter shop, pat-

tern rooms, &c. The new plant will be equipped with the machinery from the old one, and, with the exception of motors and elevators and a No. 7 or 8 Sturtevant fan, no new equipment will be required.

A NEW Stove foundry is to be established at Quincy, Ill., under the name of the Star Stove Works, by a company shortly to be incorporated with a capital stock of \$50,000.

THE MAGEE FURNACE COMPANY, 32-38 Union street, Boston, Mass., with Western agency at 86 Lake street, Chicago, have embodied many interesting features in the Magee Standard Oak Stove, which they offer for burning coal, coke or wood as a fuel. A few of these features include deflector ring, air tight ash pit, double feed door fitted with check draft and mica illumination and large ash pit door. The point is made that the Stove is so mounted and fitted that the parts will not warp or buckle.

THE DANGLER OIL HEATER FOR 1902, which is being offered by the Dangler Stove & Mfg. Company, Cleveland, Ohio, is made of polished steel with either brass or tin tank. It is ornamental in its design and powerful in operation. Its weight is only 10 pounds and it stands 27 inches high.

THE RINGEN STOVE COMPANY of St. Louis, Mo., are making the outside sections of the top plates of their Quick Meal Ranges of steel, while the oven doors, corner tubes, back flue and base are of steel plate stamped out and formed up in shapes which make the body light, strong and what is claimed to be practically indestructible. Reference is made to the fact that Quick Meal Polished Steel Ranges are increasing in popularity and gaining friends every day.

ONE of the many new patterns of Base Burners brought out this season by Rathbone, Sard & Co. of Albany, N. Y., and Aurora, Ill., is the Brilliant Acorn for hard coal. In its decorative treatment what is known as "Acorn silver nickel" has been liberally employed, which, with ample mica illumination, gives a most brilliant effect when the Stove is in operation. It is made in four sizes and embodies what the manufacturers describe as a new principle in the way of hot air circulation. The manufacturers refer to the Brilliant Acorn as the most attractive pattern which has been offered for many seasons. The Pacific Coast distributors of Acorn goods are the Harry Unna Company of San Francisco, Cal.

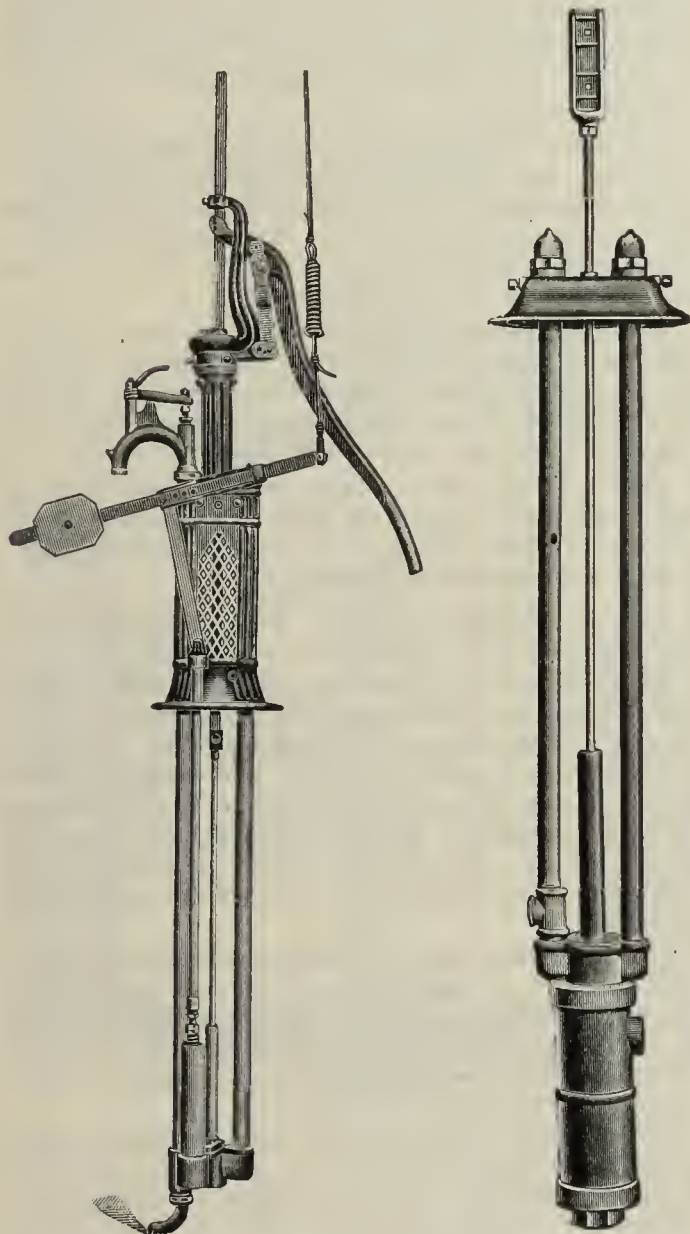
THE superiority of Thatcher Furnaces over open fire places is made clear in a graphic depiction of a debate, where in the course of a heated argument the coat tail of one of the debaters has taken fire. This scene is the leading feature of a unique circular which, on being opened, is found to show a broken view of the Thatcher Tubular Hot Air Furnace made by the Thatcher Furnace Company, 240 Water street, New York. The illustration is surrounded by striking arguments to show why the dealer should sell Thatcher Furnaces.

THERE are said to be three uses to which may be put the combination fire bowl and coking magazine used in the Patric Furnace, made by the Patric Furnace Company of Springfield, Ohio. One of these is the coking of soft coal in the magazine while coke occupies the main fire bowl, resulting, it is claimed, in a great saving of fuel; the second is the ability to carry fire in the magazine when comparatively little heat is required, such as during the spring and fall months; and the third is the use of the fire bowl for burning wood. An illustrated catalogue which the company have recently issued shows by means of broken views just how the Furnace operates.

The credit of having reached the highest altitude on record is given to Dr. Bersen and Dr. Suring of Berlin. They first went up to the height of 30,000 feet, losing consciousness for brief intervals. They continued to ascend to 33,790 feet, when one of them became completely unconscious and could not be aroused. The other aeronaut, after making a great effort in opening the valve to descend, also became insensible, and neither of them recovered till the balloon dropped to 16,000 feet.

Buckeye Pumps.

Mast, Foos & Co., Springfield, Ohio, have recently added to their line the pumps illustrated herewith. The Buckeye regulating pump with vertical three-way is shown in Fig. 1 and the Buckeye siphon pump in Fig. 2. The regulating pump has the regulating cylinder attached to the yoke of the pump. When the tank is full or nearly full the float closes the valve in the tank, which produces a back pressure in the regulating cylinder, causing the plunger to rise in the cylinder, which in turn raises the lever which is attached to the weight. The pull out wire of the wind mill being attached opposite the weighted end of the lever, the wind mill is immediately thrown out of the wind. The three-way



No. 1.

No. 2.

Buckeye Pumps.

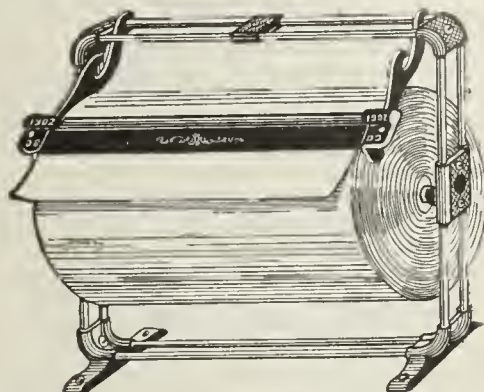
cock is made regularly with small brass tube, but can be furnished with stuffing box when so ordered.

The siphon pump is so constructed that it is supported by the base casting on the platform of the well, not requiring, it is explained, that the walls of the well be disturbed to place supporting timbers. The pipes extending from the base of the casting to the cylinder of the pump not only support the cylinder, but form air chambers, which, it is pointed out, are essential to the perfect action of this class of force pumps. The base plate also forms a guide for the pump rod. The working barrel of the pump is made of brass, and the check valve and plunger are submerged in the water contained between the outside shell and the brass cylinder.

S. J. HENRY has succeeded Henry & Clayton in the retail Hardware, Stove, Tinware, Agricultural Implement and Sporting Goods business in Central City, Neb. Mr. Henry has remodeled the store and more than doubled the former stock.

The 1902 Steel Framed Roll Paper Holder and Cutter.

The West Supply Company, Columbus, Ohio, have added to their line of paper holders and cutters the one shown herewith. It is constructed of two oblong $\frac{1}{4}$ -inch round coppered steel frames. The feet clamp the frames at and around each lower corner, while the upper corners of the frames are likewise clamped by a neat

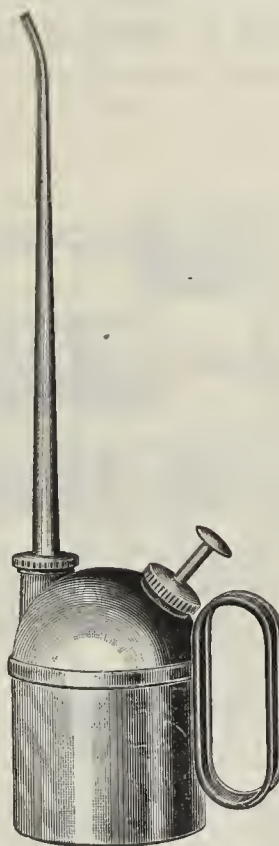


The 1902 Steel Framed Roll Paper Holder and Cutter.

quarter-round casting. Added to these are the iron clamps in the center of the upright parts of the frame. The inner part of these have U-shaped projections to support the wooden rollers. The manufacturers claim that the holder and cutter will bear one hundred fold the weight it will ever be called on to support without producing the least strain. They refer to its great strength and lightness as making it a very desirable cutter for the trade. In addition to the form shown in the cut, the devices are made in pyramids of two cutters, one above the other, also in combination form with a 6-inch and a 9-inch cutter on the bottom and a 12-inch cutter on the top.

Steel Pump Oilers.

The Noera Mfg. Company, Waterbury, Conn., have added to their line the steel pump oiler shown herewith. These oilers are made of steel throughout, copper plated,



Steel Pump Oiler.

and have a seamless steel cup bottom. The pump is in the side of the top, out of the way, while the can can be taken apart and the valves and pump inspected. The threads are of standard size, to permit nozzles to be changed to other lengths, and the hole in the end of the nozzles is made small, with room left to bore it out larger. The oilers are made in 1 and $1\frac{1}{2}$ pint, also in 1 and 2 quart sizes. They are referred to as being particularly adapted to railroad use.

The Manufacture of Enameled Ware in America.

The following is an extract from the Census Bulletin of 1900 relating to the manufacture of enameled ware in the United States:

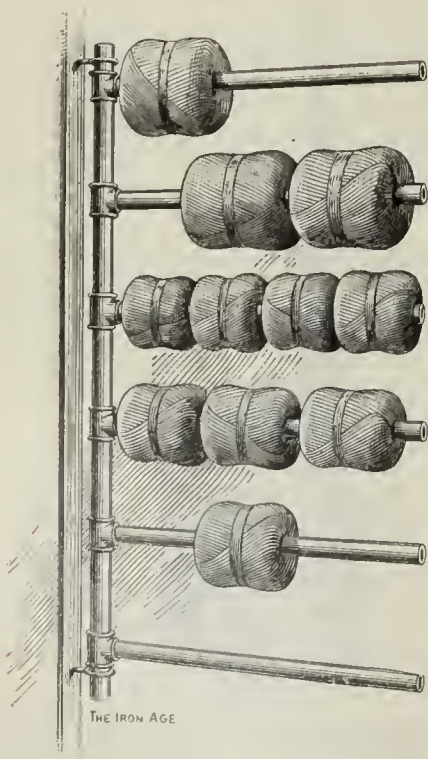
Prior to 1860 the firm of Lalance & Grosjean operated a large number of tinning pots, one of their principle products being tinned iron spoons. This firm also imported and retinned large quantities of French sheet metal goods—that is, articles which were made from heavy sheet iron and always retinned. They began to manufacture articles of this character about 1862, at their works at Woodhaven, Long Island, N. Y., using a machine devised especially for the purpose. As sheet iron of the necessary strength and ductility could not be procured from the iron manufacturers of the United States, imported black plates were used. These sheets were stamped into the desired shapes, and were dipped in a bath of pure tin. In 1876 the company began to draw the larger part of the black plates they consumed from the United States Iron & Tin Plate Company of Demmler, Pa. They now manufacture their own black plates. This New York firm were the pioneer in the United States in the manufacture of what was then known as deep French ware, now commonly called deep stamped seamless ware.

Carnahan Stamping & Enameling Company.

Carnahan Stamping & Enameling Company, Canton, Ohio, are running their enamel department, which started up April 1, to its full capacity both night and day. Their new Servian ware, which is a distinct line and different from anything in the market, is proving a seller with the trade. The enamel in this ware is said to cling to the metal body with remarkable tenacity. The color is of a copper, or Tuscan red, with a fine gloss. The company, at the present time, have an output of about 15,000 pieces per day, and they are now at work increasing their facilities in order to give them four times their present output. The company, in addition to the can and enameling departments, also produce nearly a full line of galvanized ware.

A Rack for Balls of Twine.

The rack for holding a retail stock of twine shown in the accompanying cut was made by joining short pieces



Rack for Holding Twine.

of $\frac{1}{4}$ -inch wrought iron pipe by tees, forming a straight rod about 30 inches long. Into the open ends of the tees other pieces of $\frac{1}{4}$ -inch pipe were screwed, parallel to each other, one directly above the other. The parallel pieces of pipe were of sufficient length each to hold from

10 to 20 balls of twine, according to their size. The rack was hung by screw eyes, one at each end, against the end of the shelving. It could obviously be hung on a post or against a wall, wherever most convenient. This arrangement of the rack permits it to swing horizontally, putting the stock into a small space and at the same time displaying it in good order. The device is in use in the establishment of Eikel & Stempel, Aguascalientes, Mexico.

Stove and Hardware Dealers.

HUGH RUSSELL has nearly completed a new brick building in Ashland, Ky., in which he will open a Hardware store about August 1. Mr. Russell will deal in General Hardware, Tools, Cutlery, House Furnishing Goods, &c. Catalogues from manufacturers in these lines are requested.

THE annual meeting of the Pacific Coast Hardware and Metal Association will take place at the Hotel Del Monte, Monterey, Cal., on July 16, 17 and 18, at which time the annual reports will be presented, new officers elected and subjects of general interest to the jobbing trade of the Pacific Coast discussed.

BRECKENRIDGE & BRADSHAW have disposed of their business at Battle Ground, Ind., to Sherman Shigley, and have bought the Gould, Oliver & Martin stock in Crawfordsville, where they are now located. Their line comprises Hardware, Stoves and Tinware.

DELRAY HARDWARE COMPANY, Delray, Mich., have incorporated with a capital of \$5000. The company handle at retail Shelf Hardware, Stoves and Tinware, Agricultural Implements and Sporting Goods.

TOOL & WORTHEN, Sterling, Neb., have sold their Hardware and Stove business to T. J. Harris & Co.

NASH HARDWARE COMPANY, Fort Worth, Texas, wholesale and retail Shelf and Heavy Hardware, Stoves, Tinware and Sporting Goods, have increased their capital stock from \$40,000 to \$75,000. The company advise us that during the past year they enjoyed the largest and most satisfactory trade in their history. They are enlarging their office and are getting in shape to push their jobbing interests more than ever the coming fall and winter.

THE Hardware store of Whipple & Robinson, Glens Falls, N. Y., was destroyed by fire a few weeks since. The firm, who are dealers in Shelf and Heavy Hardware, Tinware, Sporting Goods, with plumbing, heating and roofing department, have resumed business in temporary quarters.

GEO. B. EDWARDS has entered into partnership with his father, G. W. Edwards, in the Hardware and Stove business in Mendota, Ill., under the style of Edwards Hardware Company. It is the firm's intention to increase their line and variety and run a strictly first-class Hardware and Stove store. G. W. Edwards has conducted this business since its establishment in 1866. Mr. Edwards' son is a stockholder of the Acorn Brass Works of Chicago, with whom he has been connected for the past three years. Wishing to get away from city and office life, and feeling the need of more active employment, Mr. Edwards has made the change above outlined.

GEO. W. SNAPP & Co. have disposed of their Hardware, Stove and Sporting Goods business in Maryville, Mo., to Hudson & Lect.

THE DRYSDALE-ULEN HARDWARE COMPANY, dealers in Shelf and Heavy Hardware, Stoves, Tinware, Agricultural Implements, &c., Bloomfield, Mo., have been succeeded by Drysdale-Buck Hardware Company.

F. H. PICKETT is successor to C. B. Payne in the Hardware, Stove and Tinware business in Cassadaga, N. Y.

G. E. GARD, in the Hardware, Stove and Farm Implement business in Troy Mills, Iowa, has been succeeded by E. F. Biggs.

STANDER & ESMAY, Louisville, Neb., have succeeded Esmay & Rogers in the Hardware, Stove and Tinware business.

A Tunnel Construction for Underground Steam Pipes.

The tunnel construction herein described, says G. W. Blissell in an article in the *Iowa Engineer*, is to be employed in conveying steam, compressed air, electric light and power from the power station of the Iowa State College to the new engineering hall, and will ultimately be extended to the other large buildings of the college, and will constitute the distributing system for the central heating plant.

The total length of the tunnel is 460 feet, consisting of a single stretch 360 feet in length, with right angle offsets at the power station and the new engineering hall of 60 feet and 40 feet, respectively. The grade of the tunnel is about 6-10 foot to the 100 from each end toward an assigned low point, where a connection is made from the floor of the tunnel to a sewer and also from a 4-inch drain tile under the tunnel floor to the same sewer, thus securing internal and external drainage. The internal drainage connection is properly trapped.

The construction of the tunnel itself is shown very well by Fig. 1, which is a cross section.

The walls and roof of the tunnel are hard burned brick, laid up for a 9-inch wall in cement mortar, plas-

permitting expansion to whatever extent may be necessary.

The steam pipe will be anchored securely at about 70 feet from each end of the 360-foot section. The expansion between the anchorages will be provided for by the use of expansion joints of standard design. The amount of expansion thus to be provided for will amount to about 5 inches in the extreme case. The expansion occurring on the outside of the anchorage and toward the ends of the tunnel will be provided for by the spring in the offset.

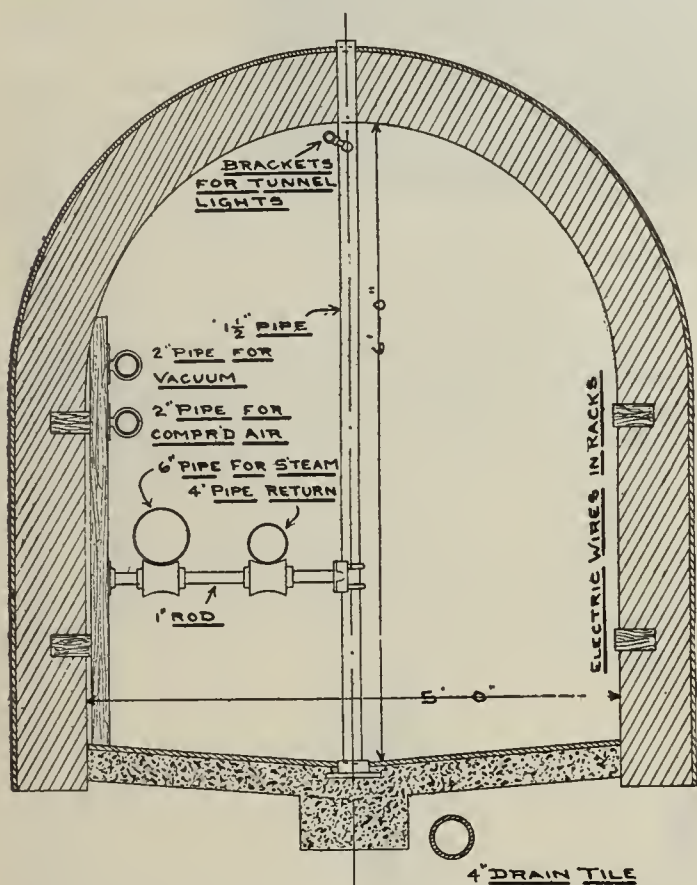
The steam and return pipes will both be thoroughly protected from wasteful radiation of heat by covering them with the best grade of sectional pipe covering. The pressure to be maintained in the steam pipes may be anywhere from atmospheric to 80 pounds to the square inch, but it is not expected that more than 40 pounds to the square inch will be required at any time.

The lighting of the tunnel itself has been provided for by placing overhead a 1/2-inch iron pipe conduit, with receptacles and lamps at intervals of 30 feet. The conduit is supported on brackets on the central column, as shown in Fig. 1.

At the present writing the tunnel itself has been constructed, the ends of the long section at the corners being left open for the insertion of the pipe. These openings will be bricked up later.

The cost of the tunnel, including excavation, brick work, cement work, drain tile, iron columns, wooden brick and back filling, was \$3300, approximately \$7 per foot. The installing of the pipe, including steam, return, compressed air and vacuum pipes and the hangers therefor, and including the lighting of the tunnel itself, is now in progress and will cost \$1800, or about \$3.90 per foot complete. The total cost, therefore, for the whole construction will probably be about \$11 per foot. In comparing the cost of this construction with others frequently used it will be noticed that the same is quite high, but, on the other hand, it is expected that the construction, at least of the tunnel part, will last for all time, and it is reasonable to assume that on account of the accessibility of all of the pipe and electric circuits the same will be kept in better condition than they would if hopelessly buried under the ground, and that on account of these features the running expenses due to the radiation of heat occasioned by the deterioration of the insulation will be reduced to the very lowest figure.

Another advantage is in the use of the tunnel for electric light and power circuits. This exists in the fact that the same will be underground, thereby doing away with unsightly overhead poles and wiring system, and doing away with the liability of such overhead wires becoming entangled or blown or broken down.



A Tunnel Construction for Underground Steam Pipes.

tered outside to a thickness of 1/2 inch with cement mortar. The floor of the tunnel is 4 inches thick, constructed according to the usual specifications for cement sidewalk.

The extreme height of the tunnel on the inside is 6 feet and the width on the inside is 5 feet.

At intervals of 10 feet in the length of the tunnel a 1 1/2-inch steam pipe is placed to serve as a column for carrying supports for the heavy pipes. This column is supported by a flange casting at the bottom, resting on a 12 x 12 pier of concrete, and the column is built into the roof of the tunnel, as shown.

At the same intervals (10 feet), and opposite the columns, are placed two wooden bricks on each side of the tunnel. These will serve on one side to support a 2 x 4 cleat, which will carry one end of the pipe carrier, and will serve for ring pipe hangers, as shown, to carry compressed air and vacuum pipes required for operating the thermostatic heat regulation system of the new engineering hall. On the opposite side of the tunnel will be placed a similar cleat, on which the electric lighting and power wires will be suitably hung.

The pipe carrier consists of 1-inch round iron rod, supported by a flange bolted to the cleat on the wall of the tunnel and by a clamp casting secured to the column in the center. The carriers may be adjusted to any height desired to give the pipes thereon the required grade or fall. The pipes rest upon rollers, as shown, which are free to turn upon the round iron rod, thus

Saunders Pipe Machines.

The last catalogue by D. Saunders' Sons, Yonkers, N. Y., deals very thoroughly with their wide line of pipe threading machines, special machines for pipe mills, tapping and drilling machines, hand stocks and dies for pipe, &c. In their No. 4 C improved pipe threading, cutting and nipple machine, the arrangement of the chuck is such that the pipe is gripped or loosened by the simple movement of the lever, without the necessity of stopping the rotating motion of the gripping chuck, as is the case when the ordinary pipe machine gripping chucks are used—namely, the universal or independent. The movement of the gripping jaws is applied through a system of sliding blocks and levers, which gives the required motion to the chuck jaws to grip any size pipe within the range, 1 to 4 inches, and provides sufficient leverage to grip it firmly by an easy motion of the lever. The operation of adjusting the jaws to grip the different sizes of pipe is very quickly made. After the pipe has been threaded and has to be moved to adjust it for cutting off, or for any other reason, the die head is pushed to one side, allowing the pipe ample room to pass through the cutting head without passing through the die head to the injury of the chasers by the pipe sliding over them.

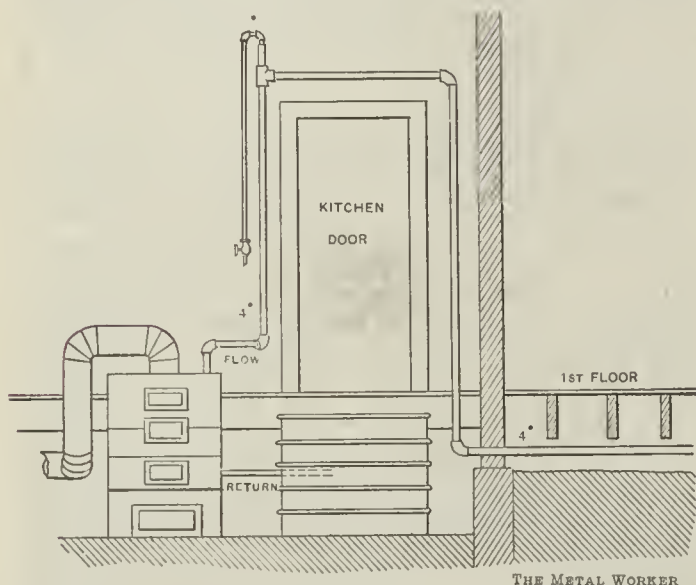
L. STANTON of Frostburg, Md., who has a branch of his tinsmithing and heating establishment at Lonaconing, has the contract for heating the Presbyterian Church and parsonage in that town with a hot water system, and also for heating the Barton Methodist Episcopal Church with a steam system. These contracts are largely due to the efforts of Samuel Fresh, who is in charge of Mr. Stanton's Lonaconing branch.

PIPING UNDER DIFFICULTIES.

BY PIPER.

Down by the joyous sea waves of historic Coney Island is situated a small but beautifully built hotel, largely patronized in winter as well as summer. The theory that Coney is cut off from civilization during the winter months is wrong, as any one who takes the trouble to journey thither on a fine day in winter can prove for himself. The great Ocean Parkway or Boulevard, one of the finest driveways in America, terminates at Coney Island, and it is not far from this point that the above-mentioned hotel is situated.

The proprietor, owing to a large increase in his business, was compelled to extend his quarters. Some two



Piping Under Difficulties.—Fig. 1.—An Elevation.

years previous to the time here spoken of this same proprietor had a dwelling house built nearby. In the planning and carrying out of the operation great care had been taken to avoid the possibility of striking tide water. Coney Island is but a sand bank, and a not over high one at that, and water is generally found 4 feet below the street level in that part. In this case extra precautions were taken to be on the safe side, as steam heating was to be introduced and was considered one of the chief reasons why a dry basement must be secured. The first floor was placed at 6 feet above the street level, which brought the basement floor about 2 feet above danger line of water.

In starting the hotel project the same architect who planned the dwelling was called on to furnish sketches. These were made, and after many alterations bids were called for and a contractor selected.

Some time after the roof was on it occurred to the owner it was time to talk to us about steam heating. We knew of the undertaking, but had been assured we would be called on in time to go over the building and specify what we wanted in the way of room for boiler and other such details. Certainly, in view of the precautions taken in the case of the dwelling house, we were justified in feeling easy concerning the hotel. Imagine our surprise on visiting the place to find the main floor but 2 feet above the street level. Of course steam heating was out of the question, for the obvious reason that the water line of the boiler must be above the level of our main.

As no place could be had in the main house wherein to set the boiler, a one-story addition was built for the purpose. Meanwhile we planned overhead systems, both steam and water, but were informed that if we could not put in a system that looked, above the cellar, like every other person's apparatus, we could drop the job and the owner would put in stoves and stick the stove pipes through the roof. Here we might say that, owing to architectural difficulties, we could not get a main line to the attic for an overhead hot water system had we tried it. We then laid out the following plan, which was accepted by the owner, so far as the looks of it were concerned.

The deepest we could go with the floor of the boiler room brought the top of our boiler level with the main floor of the house, as shown in Fig. 1. The only thing left to us to do was to install a one-pipe circuit system, as shown in Fig. 2. Personally, we are not enthusiasts on the subject of placing such systems. We had placed, up to that time, quite a number of one-pipe jobs, and while we had had success with them we preferred, and do yet, to hold to the two-pipe for first choice and the overhead system for second.

In running this job out from the boiler the first obstacle was the door leading from the kitchen down to the boiler room. We could not cross this, nor go under it, so we jumped up over it. At the first turn above the door, the highest point, we placed a tee and a nipple and cap, with air valve tapped in on top, to form an air chamber and carried a $\frac{1}{4}$ -inch pipe down where the air valve could be conveniently reached. This collected all the air that would form in two weeks and prevented the liability of stoppage of circulation. The main was carried over and down on the other side of the doorway and taken in under the building, so as to just clear the floor beams. This "siphon" we would advise in any case, as it prevents the possibility of the job turning about and working backward. We have seen such a thing happen, but never where the above provision was made.

The rest of the job was carried out very much as the ordinary one-pipe job is done, the main making a complete circuit beneath the house and returning to the boiler at about the level of the return opening. We would have preferred to run two circuits, one on each side, so as to equalize the temperature of the water throughout the house a little more evenly, but we had girders and other obstructions, which left us no choice in the matter but to run as we did.

As we proceeded away from the boiler we increased the amount of radiation, or rather the ratio, in proportion, slightly, until, at the end of the circuit, we had increased fully 20 per cent. over the ratio used at the

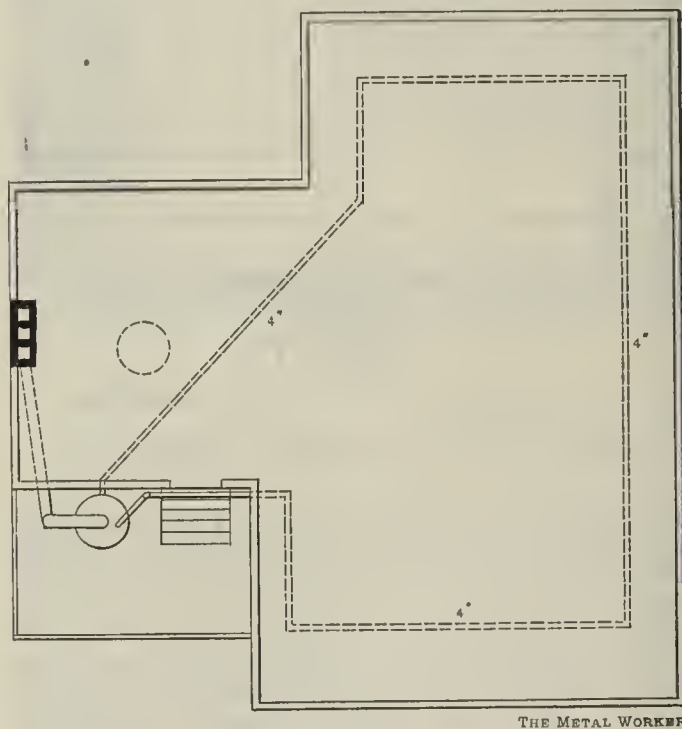


Fig. 2.—Plan Showing Circuit Main.

first connections to the main. This, of course, to provide for loss of temperature in the water toward the end of the circuit. The total amount of radiation was in the neighborhood of 850 feet.

The apparatus was a perfect success, both as to circulation and temperature of building. The smoke pipe, by the way, had also to be dropped down on the opposite side of the boiler from the main and carried under to the flue originally built for it, about 10 feet away.

SWINTON & Co., Port Jervis, N. Y., have secured the contract for heating and plumbing the new Women's Building at the County House, near Middletown, N. Y.

The Improved Tread-Kill Shaking Grate.

The convenience that can be derived from the equipment of the fire boxes of large furnaces of any description with grates so constructed that, by the operation of levers, the fine ashes can be shaken out of the fire and the bars have a grinding effect for crushing clinkers has led W. H. Treadwell & Co., 95 and 97 Liberty

In connection with these grates the company make an extensive line of furnace castings and steam boiler fronts. Their fronts and grates have been used by the heating contractors who have installed the power and heating systems in some of the largest buildings in various sections of the country, and have resulted in efficient and economical service with a saving in labor that has brought additional orders to the manufacturers.



The Improved Tread-Kill Shaking Grate.—Fig. 1.—General View.

street, New York, to produce the Tread-Kill shaking grate, shown in the accompanying illustrations. This grate has been developed as the result of large experience, and has been thoroughly tested before being put upon the market. In Fig. 1 is shown what is termed a "three-bank grate," arranged with twin levers to shake the six units of the grate—three in the front and three in the rear. It is pointed out that the handles, fulcrum and jaws are made of the best quality of malleable iron, while the shaking levers and shaking rods are of forged steel. No part of the grate is made to meet cheap com-

The grates are explained and illustrated in a new catalogue recently issued by the concern.

Central Station Heating.

The Edison Illuminating Company of West Chester, Pa., have let the contract for the installation of a steam heating plant to the American District Steam Heating Company of Lockport, N. Y., and work will begin very shortly on the new plant. The present contract calls for the laying of 3000 feet of iron mains, of different diameters, on brick foundations. Starting at the power house 10-inch pipes will be run through a number of streets. The whole plant is contracted to be completed by September 15, fully six weeks before patrons will need heat, but in order to give the plant a severe test. Superin-



Fig. 2.—View of Separate Parts of Tread-Kill Grate.

petition, but rather with a desire to make it the best on its merit. Every casting, whether gray iron or malleable, is made at the plant of the firm, of their own mixture and under their own supervision.

In Fig. 2 are shown the separated parts of the grate, giving a good idea of the construction of the grate bars, which are strong and very open in pattern so as to allow the free entrance of an abundance of air to the fire to promote combustion. The construction is also designed to prevent warping and to combine strength with durability. The company also make a dumping grate of similar character, which is equally well designed for strength and durability and to aid the boiler under which it is used in getting up steam quickly.

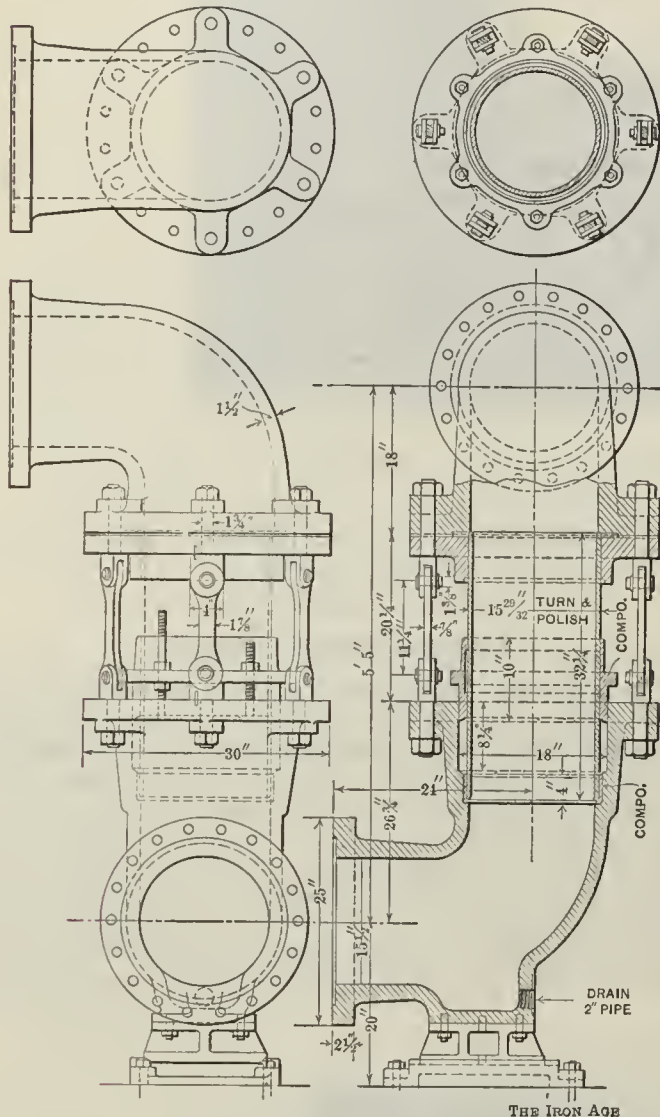
tendent Pyle claims that the company will be fully able to compete with coal prices when that article is at its normal price, and it will be much cheaper than when coal is at present rates. But the great advantages of the street steam heating over the individual private plant is that it can be turned off or on at will, at any time, day or night, and there will also be less fire risk and no dust nor coal dirt about the house.

COLE & ANDRUS, Castile, N. Y., are heating and plumbing the Silver Springs National Bank Building, also the residence of Charles Christ, at the same place. The firm are also installing a Hot Air Furnace in the residence of Chauncey Bramard, at Gainesville.

A Swiveling Joint for a 16-inch High Pressure Steam Main.*

BY R. E. CURTIS, BOSTON, MASS.

All engineers will probably agree that slip or swiveling joints in steam lines are commonly undesirable. Nevertheless, there are frequently cases in which some form of such joint cannot be avoided, and it becomes of importance to reduce their inherent disadvantages to a minimum. The swiveling joint here described was designed to meet a special situation, but its size and construction are such as, perhaps, to make it of some general interest. The problem presented was that of making a full sized connection between the ends of two 16-inch mains, carrying 160 pounds pressure, lying parallel



A Swiveling Joint for a 16-Inch High Pressure Steam Main.

to each other and of such length that the relative movement of the ends by reason of expansion amounted at times to several inches.

The first form of connection to suggest itself, and in all respects the most desirable, had it been practicable, was by a simple loop of pipe. A little calculation, however, showed that this could not be used without danger of excessive stresses being set up. Then several forms of flexible connection were investigated, and the final design adopted as being on the whole most satisfactory in the following particulars: *a*, reasonable form and dimensions; *b*, form and arrangement of parts under stress; *c*, least number of joints requiring packing and removal of those from points where water might collect. All details were designed for a working pressure of 225 pounds.

Each joint consists of two elbows held together by a system of links—a flange bolted to the upper elbow and a length of pipe projecting downward from the flange into a stuffing box formed in the lower elbow. Two of these joints are used, the lower elbows being secured to

the ends of the mains and the upper elbows joined by a length of pipe. The elbows and flanges are of air furnace gun iron, and are of substantial dimensions. The pipe is a piece of 16-inch outside diameter pipe, 15½ inches inside diameter, finished smooth on the outside. The gland and the ring at the bottom of the stuffing box are of composition, the former being held in place by six studs, three of which are long enough to hold it in a position to allow the packing to be easily gotten at. The ring and each end of the gland are made easy fits about the pipe. The endwise pressure is taken up and at the same time the rotation of the joint provided for by six mild steel links carefully fitted and so proportioned that the entire load can be borne by three with ample margin for safety. These links with their supporting bolts form a simple system, which assures a fairly even distribution of stresses, and is always open to observation.

Each complete joint is carried by a sliding support consisting of a chair cast separately (to avoid complication of the pressure part) and bolted to the lower elbow and a bearing plate anchored to the masonry floor. The stuffing box was made of generous depth, and so proportioned that metallic packing could be employed if desired, but so far only asbestos packing has been used, and the joint has ordinarily been perfectly tight.

Conditions unforeseen at the time of making this installation have led to a radical rearrangement of the entire system of steam mains, so that a connection of this kind will no longer be needed, and the swivels will go out of service during the present year. However, had this not been done, there is every reason to believe that they would have continued to serve satisfactorily as long as any other part of the mains. Certainly they have in almost three years of service proven so satisfactory and required so little attention that there would be no hesitation about duplicating the construction under similar conditions.

New Plant for the J. L. Mott Iron Works.

For a number of years the J. L. Mott Iron Works, Beckman and Cliff streets, New York, have maintained a large manufacturing establishment at Mott Haven, one of the suburbs of New York City. The necessities of the company having outgrown the facilities of this plant, they have purchased about 12 acres of ground in Trenton, N. J., adjoining their sanitary earthen ware manufacturing plant, which also occupies some 12 acres. There they propose to erect the best plant in the world for manufacturing not only sanitary earthen ware, water closets, lavatories, wash trays and solid porcelain bathtubs, but also enameled iron bathtubs and similar goods. In addition, they will have foundry capacity for manufacturing a variety of furnaces and ranges and such other cast iron goods as are needed to compete their extensive line of plumbing goods and supplies. The plant will also include a modern brass foundry and brass finishing shop, the house already having a well earned reputation for the excellence of design and beauty of finish of their goods designed for the equipment of the most luxurious bathrooms. In order that the new plant may be all that the company desire, and inasmuch as there is no need for any undue haste, sufficient time will be taken in the arrangement of the plant, the designing and erection of the buildings and their equipment with the special machinery that is being constructed to meet their special needs to make the works, when completed, without a rival in their line. The plant in Trenton will be admirably located between two of the largest cities in the United States, and will have the advantage of exceptionally good railroad facilities.

THE strike among the journeymen plumbers, steam and gas fitters at Bangor, Maine, was settled on July 1 by classifying the workmen and adopting a falling scale of wages. First-class journeymen plumbers and steam fitters will receive \$3 per day; second class, \$2.50; juniors, \$2 per day; gas fitters, \$2.50 per day; steam fitters' helpers, \$1.75, and metal workers, \$2.50. This scale of wages is to be continued in force for one year.

* Paper presented at the Boston meeting of the American Society of Mechanical Engineers.

Boiling Points of Water at Different Hights of Vacuum.

Not only those who do steam heating work, but all who heat water, will be interested in the table which we reproduce by permission from the catalogue of the James A. Trane Vacuum Heating Company of Chicago, giving the boiling points of water at different hights of vacuum. That it is not necessary for water to reach a temperature of 212 degrees to give off a vapor that is effective in heating is known to all who have given any study to steam heating, but to what extent a vacuum aids in such work will be better understood from the following:

Under vacuum, water boils at 98 degrees, or any temperature above. It will be seen that after the temperature in the apparatus is reduced below 212 degrees the vacuum heating system, unlike the pressure steam system, continues to supply the necessary steam for heating. Referring to the following table, compiled and presented for the first time by us, the different temperatures will be noted at which water boils under different degrees of vacuum as expressed in even inches:

Table.

Hight of mercury in inches.	Temperature. Fahrenheit.	Hight of mercury in inches.	Temperature. Fahrenheit.
0.....	212.0	16.....	175.8
1.....	210.3	17.....	172.6
2.....	208.5	18.....	169.0
3.....	206.8	19.....	165.3
4.....	204.8	20.....	161.2
5.....	202.9	21.....	156.7
6.....	200.9	22.....	151.9
7.....	199.0	23.....	146.5
8.....	196.7	24.....	140.3
9.....	194.5	25.....	133.3
10.....	192.2	26.....	124.9
11.....	189.7	27.....	114.4
12.....	187.3	28.....	108.4
13.....	184.6	29.....	102.0
14.....	181.3	29.92.....	98.0
15.....	178.9		

Soft Coal and Water.

Water Commissioner Dougherty of New York City is in hot water, says *Fire and Water*, over this soft coal business. The citizens in the neighborhood of the West Ninety-eighth street pumping station complain of the dense clouds of smoke which roll out of the chimney of the high pressure pumping station in that street. Deputy Commissioner Long admits the truth of the complaint, but pleads that he cannot get hard coal in sufficient abundance, and if he could, he could not store it, since the station is built between two apartment houses, and, therefore, there is no space for storage. "It is a choice (he says) of using soft coal or stopping the pumps. The station supplies the entire upper West Side—that is, the high region and a large section of Harlem. A shut down would cause a terrible outcry, because then there would be no water in the houses save on the first two floors during a few hours of the night. This is the reason we decide to burn soft coal."

The Standard Boilers.

The literature prepared by Giblin & Co., Utica, N. Y., to acquaint the steam and hot water heating trade with the construction and merits of their Standard line of heating apparatus will be of interest at this season. A recent publication of the concern is a 16-page catalogue, which after giving terms and ratings explains in detail the aims of the manufacturers in their construction. The first two pages are devoted to the Little Giant steam and hot water boilers which are round in form of tubular construction and arranged either to have a rising draft or a more indirect draft, secured by means of a diving flue and a diaphragm. In either case a large surface is exposed directly to the incandescent fuel in the fire chamber, and the products of combustion are made to come in contact with all parts before finding their escape.

The Standard boiler is a round boiler made in four sizes having 18, 20, 24 and 29 inch grates, respectively,

and constructed of three pieces connected by means of push nipples. The construction presents a large fire surface and secures an indirect draft by means of a diving flue. The Standard sectional boiler of the vertical type is of the return flue and pus nipple construction, with grates having from 4 to 13 square feet of surface, and with from 101 to 248 square feet of fire surface. These boilers are all provided with grates of the anti-clinker, labor-saving type, made to be operated by means of levers, and so constructed as to be readily removed or replaced in case repairs are necessary.

A Steam Goods Catalogue.

We have received a copy of Catalogue No. 7, devoted to Powell's steam goods, manufactured by the Willam Powell Company, 2525-2531 Spring Grove avenue, Cincinnati, Ohio. The catalogue is 4 x 5¼ inches in size and consists of 145 pages, followed by a supplement consisting of 18 pages more containing valuable tables and useful information for those who use steam apparatus. The catalogue bears the announcement that it is issued in the fifty-first year of the success of the house, and that through the excellence of their equipment and superior training of their workmen, with the use of the best materials, the specialties of the concern will continue to be worthy of use by the most exacting engineers. The first section is devoted to the Star globe valve, made for either screw pipe or flanged connections, having a seat so constructed that it may be reground, and made in a variety of sizes, from ¼ inch to 6 inches. Following are Powell's hydraulic globe valves and check valves designed for high pressure; angle valves, lever throttle valves and gate valves, which form another line of standard goods of high grade. These are followed by a variety of special valves for coke ovens, for fire hose connections, for radiators in a variety of styles, also vertical and horizontal check valves and ball check valves. Another section is occupied by iron body valves, lever safety valves, pop safety valves and lubricating valves.

Thirty pages of the catalogue are devoted to an extensive variety of lubricating valves for gas engines, locomotives, air compressors, and adapted for use wherever journals and large bearings need automatic and continuous lubrication. Boiler oil feeders, sight feed oilers and multiple oilers in a variety of styles are succeeded by glass cylinder oil pumps, dynamo and motor oil gauges and cuts showing a multiplicity of oiling devices, some in connection with machines and engines to show their application. These are followed by water gauges, steam whistles, combination water columns and positive and automatic air valves and cylinder cocks. In another section are shown rough steam and gas service cocks, meter cocks, brass unions, expansion joints and a variety of special brass work. The catalogue concludes with a price-list of brass steam fittings, including elbows, tees, crosses, lock nuts, nipples, bushings, &c. For the convenience of customers a well arranged index is provided at the end of the publication.

An English Method of Heating Cars.

The Northwestern Railway Company of England, says the *Scientific American*, have equipped some of their trains with a system of heating to which the much abused term "unique" may well be applied. Two concentric cylinders are employed, the annular space between which communicates with a steam pipe extending from the locomotive boiler. The inner cylinder contains acetate of soda—a compound remarkable for its property of liquefying when heated and of cooling very slowly. The radiators thus constituted are incased in asbestos lined boxes having hinged doors. By opening or closing the door of a box the heat is turned on or off.

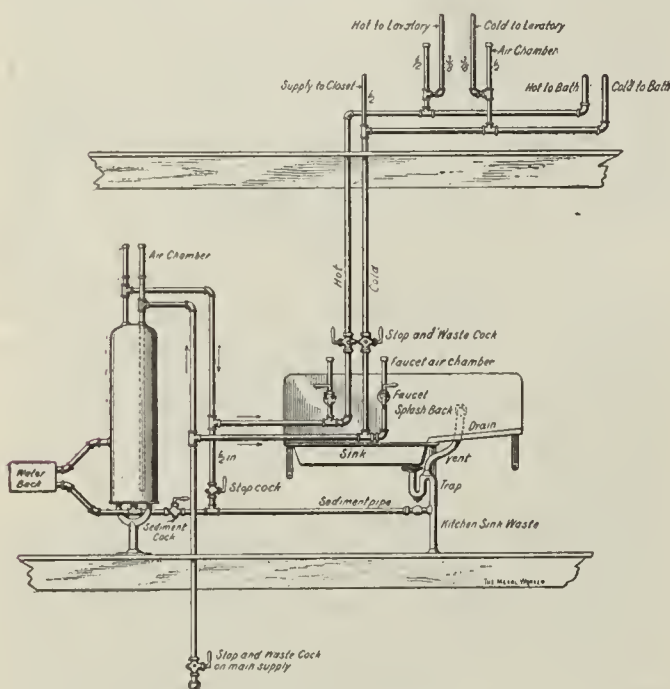
THE GUILDERLAND FOUNDRY COMPANY, Guilderland, N. Y., are manufacturers of Cast Iron Fittings for steam, gas and water, having been incorporated in 1900. O. Chan Wells, 10 Havemeyer Building, New York, is their direct representative, taking the entire product of the company and marketing it.

COLD AND HOT WATER SERVICE PIPING.

BY HELMAR.

In ordinary work where the bathroom is on the floor above and not distant from the kitchen, the simplest method of piping is best. Whether lead or iron pipe is used, fewer joints, less pipe and the least time are required for such. The stop cocks controlling supplies to the bathroom are placed over the sink, as shown by the accompanying sketch. The hot service is properly kept above and separated from the cold on cross runs, and the hot faucets should always be on the left side. In lead pipe jobs the hot pipe is often dipped to a point below the sink, where a long shank stop cock will just reach from the hot pipe to the sediment pipe. The trap in the hot service made by dipping, as shown, must always be provided with a drain, though it is not always connected to the waste; a pet cock will answer. It is sometimes convenient to place the hot sink faucet directly in the cross run where it will also act as a drain.

The drip from the trap in the hot service should never be connected between the sediment cock and the boiler



Cold and Hot Water Service Piping.

without a cock on it. This method will do if a cock is placed in the drip, and the cock may be left turned on or off regularly, but must be off when the faucets are repaired at the sink or the boiler will empty down to the level of the hot faucet. The trap, when the drip is thus connected, cannot be drained dry for repairs unless the hot faucet is directly on the cross line. On the whole, the connection as shown is best; it will take care of condensation of vapor from a hot boiler while a new sink faucet is being wiped in, and is preferable for general reasons, especially on lead pipe work. The sketch does not show all of them, but on iron pipe work unions should be placed on stove connections near the boiler; on both pipes over the boiler; on both pipes over the bathroom stops; on the drip to the hot service, above the cock; in the sediment pipe, on the drain side of the drip connection, and on the main cold service above the stop in the cellar.

No fixture should be set without unions or union couplings at the fixture end of the supply pipe. Liberal sized air chambers should be placed over or near all faucets. If the chambers will look unsightly, or it is difficult to place them at the faucets, extra large ones may be placed wherever they will be least in the way, but they should be located so as to get the most direct possible thrust from the water. Air chambers over the boiler help to prevent reaction at the faucets, and also lessen the concussion caused by the condensing of steam bubbles which form (usually in the water back, but sometimes in an air space which should not exist under the upper head of the boiler) when the water is extremely hot and the fire intense.

When the bathroom is on the same floor as the kitchen the service pipes are sometimes brought straight across from the top of the boiler and down behind the sink, the stop and waste cocks being placed inverted in the same position, as shown in the sketch. This gives the stops control of the sink faucets, too, which is bad, because the sink is without water when anything gets wrong with the bathroom work. It is a better plan to bring the hot water below the sink and carry both lines direct to the bathroom with stop and waste cocks placed after the branches for the sink supplies have been taken out. The waste tubes can be connected to the sink waste.

Lever handle cocks are best where unskilled persons are to use them, because it is easy to see whether the cocks are turned on or off. Those who wrangle over hair splitting points object to connecting the sediment pipe below the sink trap on account of the probability of sewer air thus entering the house at times.

The Canton Heaters.

The J. H. McLain Company, Canton, Ohio, are sending to the trade a 64-page catalogue bound in a brown cover, bearing on the front, in silver bronze, their trademark and the address of the company. The title-page gives the branch offices of the company in New York, Cleveland, Philadelphia and Indianapolis, and states that the Crane Company of Chicago are their Western selling agents, with houses in Sioux City, Kansas City, Salt Lake City, Omaha and St. Louis. After a special notice in reference to the ratings of boilers and terms, general and sectional views of the Cornell steam and Princeton hot water boilers are presented. These boilers are of the sectional type and of the return flue construction, and are made in a variety of sizes, rated to carry from 300 to 5200 square feet of direct radiation, and having grates 20, 32 and 42 inches wide.

The Princeton boiler for hot water is rated to carry from 500 to 8500 square feet of hot water radiation. The Humber and Oxford heaters for hot water and steam, which follow, are round and of the horizontal sectional type. In these boilers the smoke flues are staggered so as to secure an indirect draft, and the greatest possible heat from the products of combustion. The Cambridge and Amherst are steam and hot water heaters of a similar type. The Columbia and Lehigh are new water and steam heaters, cast in one piece, having a horizontal return flue at the top. The Sandow is a water heater well known to the trade for heating small buildings, and also for connection with large hot water storage tanks used in apartment houses. The Seneca two and three column steam and hot water radiators are shown with tables giving the complete line of sizes and dimensions in which they are made. The catalogue also shows a variety of steam and hot water radiators, valves, union elbows, corner valves, positive and automatic air valves, expansion tanks, pipe hangers, thermometers and gauges, and a number of steam fitters' supplies and specialties. Fourteen pages are devoted to tables and useful information for those who have to design and install steam and hot water heating plants.

THE UTICA HEATER COMPANY, Utica, N. Y., with branch offices in New York, Boston and Chicago, are sending out a four-page circular showing the Keystone and Imperial Steam and Hot Water Boilers. The Keystone Boiler is a combination cast iron and steel construction arranged to provide a large fire surface and an indirect fire travel. The Imperial Boilers are of the vertical sectional type, exposing a large surface through the use of the auxiliary crown sheet and securing a long fire travel through the return flue construction. The circular also calls attention to the Keystone two and three column Radiators.

JAMES R. SMITH, Mechanicsville, N. Y., bid \$1804 and secured the contract for plumbing and steam heating the County Court House and clerk's office, at Ballston Spa, N. Y.

Heating and Plumbing Notes.

THE CENTRAL FOUNDRY COMPANY, New York, have sent out notices to the stockholders that the annual meeting will be held at Exchange place, Jersey City, N. J., on July 24, at 12 o'clock, noon.

THE MASSACHUSETTS INSTITUTE OF TECHNOLOGY, Boston, Mass., has received a gift of \$5000, with the promise of \$5000 a year more for two years, for the purpose of conducting investigations in sanitary science, including the questions of the purification of water and the disposal and utilization of sewage, garbage and other wastes. The work will be carried on under the direction of Prof. W. T. Sedgwick, the present head of the Department of Biology of the institute.

F. W. MARSH, Winsted, Conn., has installed a hydraulic ram and tank for F. B. Lawton at New Hartford, and has completed a contract for gas piping, &c., at the First Baptist Church.

W. H. MORRISON, Torrington, Conn., has the heating of the new factory of the Union Hardware Company, and is at work on plumbing for the Hendey Machine Company, in that city.

A BRANCH PLANT of the Pintsch Compressing Company, manufacturers of the Pintsch Gas Lighting System, whose headquarters are in New York City, will be built in Nashville, Tenn., at once. The Pintsch gas is largely used in lighting railroad cars.

THE EPWORTH GAS LIGHT & HEATING COMPANY of Waterloo, Iowa, are distributing a little pamphlet devoted to their Acetylene Gas Generators and Automatic Gas Regulators. In addition to illustrations showing the Generators, views of a number of churches and important buildings are presented in which the Generators are installed, as well as testimonial letters from those who are using the Ideal Epworth Generator, expressing their satisfaction with its operation.

ARCHITECT F. R. COMSTOCK, 20 East Forty-second street, New York City, is receiving estimates for the erection of the Methodist Episcopal Church at Morgantown, Va., also a parsonage. The church will be 85 x 116 feet, with a tower in the center 100 feet high. The parsonage will be two and a half stories high and 30 x 51 feet in size. Both the building will require a heating and plumbing system, for which estimates are desired.

BROWNELL & DICKINSON are plumbing a nine-tenelement building for Stetson & Son, at Northampton, Mass.

THE plumbing establishment of John H. Knepper & Sons, 501 Washington street, Buffalo, N. Y., was recently entered by burglars, who carried off more than \$500 worth of fine Portable Gas Lamps, with porcelain shades and glass equipment.

THE ADIRONDACK HARDWARE COMPANY of Saranac Lake, N. Y., have the contract for plumbing the new \$100,000 Hotel Kirkwood, to be erected on the historic Camden Heights, S. C.

IN view of the strike of the journeymen plumbers of Norfolk, Va., the Master Plumbers' Association, composed of the proprietors of all the plumbing establishments in Norfolk, Portsmouth and Berkeley, Va., have voted to employ no more union plumbers.

THE STEAM APPLIANCE & SUPPLY COMPANY, 1506 Chemical Building, St. Louis, Mo., are sending to the trade a catalogue devoted to the Modoc Feed Water Heaters, Receivers, Steam, Oil, Ammonia and Vacuum Oil Separators, Expansion Joints, Chain Pipe Tongs and Clipper Rocking Grates, suitable for use under large boilers or furnaces of any type. The company also state that they are the agents for the Paul System of Heating, and several pages of the catalogue are devoted to an explanation of that system, a list of buildings being given in which the heating plant has been equipped with the Paul system.

THE WELLS BROTHERS COMPANY of Philadelphia, Chicago and New York have signed a contract to erect a \$6,000,000 heating, lighting and power plant in Chicago for the Metropolitan Heat, Light & Power Company of that city. There will be eight or ten buildings, all of heavy steel construction, covering an area of about

14 acres. These will be equipped with all the latest improved appliances and machinery necessary to a plant of the kind.

W. & B. DOUGLAS, 83 John street, New York, are distributing a 12-page pamphlet devoted to the Douglas Electric and Power Pumps. The company's triple action direct connected Electric Pump is being largely used for filling the tanks of apartment houses and similar work in all large cities where electricity is available. Any servant can work the switch to start or stop the Pump, no special skill being needed as with an engine Pump.

THE COHOES ROLLING MILL COMPANY, Cohoes, N. Y., manufacturers of Bar and Skelp Iron, have recently installed a Pipe mill for the manufacture of Wrought Iron Pipe.

AT a recent meeting of the British Gas Institute Walter Hole pointed out the saving which could be realized by using 12-foot lengths of Cast Iron Pipe in the place of the 9-foot lengths which have been the standard in England. American makers of Cast Iron Pipe have argued persistently for the change, with apparently little effect until now.

IN the United States Circuit Court at Pittsburgh, on Monday, July 7, an affidavit of defense was filed in the equity suit of the Standard Sanitary Mfg. Company against James W. Arrott, Jr., an action to compel the defendant to deliver to the plaintiff certain letters patent on improvements in dredges for pulverulent materials. The defendant says the plaintiffs were allowed by him to manufacture the articles, for which they were to pay him a royalty.

THE GLAUBER BRASS MFG. COMPANY of Cleveland have purchased the old power house of the Cleveland City Railway Company in Cleveland and will equip same for their business. The power house has been out of use since the cable railway was dispensed with, and it is one of the strongest and best looking buildings of its class in the city. The building will be thoroughly remodeled. A power plant for driving all machinery will be installed. When improvements are completed, it is claimed the plant will be one of the best equipped of its kind in the country.

DEMPSTER MILL MFG. COMPANY, Beatrice, Neb., manufacturers of Wind Mills, Pumps, Tanks, Well Machines, &c., have during the past 18 months made a number of substantial improvements in their plant by which the capacity of their foundry, machine shop and warehouses has been materially increased. They have also added a galvanizing plant. The company refer to the success which they have met in introducing their Gasoline Engine, which is referred to as a new departure as compared with most of other makes.

THE graduation exercises of the Baron de Hirsch Trade School, 222 East Sixty-fourth street, New York City, were held on Thursday night, 75 students receiving certificates at the hands of the superintendent, J. Ernest G. Yalden, who also distributed the prizes, which were tools used in the trades in which the recipients were most proficient. A. S. Solomons, general manager of the Baron de Hirsch Fund, and other members of the Board of Trustees of the school, made addresses. The sixteenth class will be admitted on August 18 to instruction in the sign and house painting, plumbing, carpentry, electrical and machinists' trades.

JOHN STOCK & SONS of San José, Cal., bid \$1732 and secured the contract for the plumbing and sheet metal work on the Mechanical Engineering Building at the Leland Stanford, Jr., University, at Palo Alto.

THE COUNTY COMMISSIONERS at Lawrence, Mass., will receive bids until July 17 for plumbing and steam heating the Court House in that city.

THE JENNISON PLUMBING COMPANY of Fitchburg, Mass., have the contract for heating, plumbing and gas fitting the new Post Office Building, to be erected in that city.

J. J. FITZGERALD & Co., Maysville, Ky., have equipped the Central Presbyterian Church in that town with a new heating system.

PHELPS BROS., 284 Pearl street, the New York representatives of the Pennington Foundry & Heater Com-

pany, Pennington, N. J., are sending out a new price-list of the Pennington M. B. M. Boilers, announcing that the company are now prepared to fill orders for the 30 Series, which have 30½-inch grates and are rated to carry from 900 to 2700 square feet of direct steam radiation. The price-list is accompanied by circulars relating to the company's Elmo Automatic Float Air Valve and the Pipe and Boiler Covering Material made by the Norristown Covering Company.

WILLIAM A. KERR, secretary of the Board of Education of Hoboken, N. J., will receive bids until August 4 for plumbing, heating and ventilating a new school building in that city.

HENRY BEUTELSPACHER, Bridgeport, Conn., is putting in new plumbing and fitting up new toilet rooms in Julius Pfau's *café* on Main street, Bridgeport.

HENRY SINCLAIR, Ridgely, Md., is issuing a little catalogue devoted to the Sinclair Manifold Steam Cooker and Heater. This consists of a well constructed Pipe Boiler designed to be inclosed in a substantial casing and connected with a horizontal steam drum at the top. The apparatus has been largely used and with satisfaction, as is shown by the number of testimonial letters presented in the catalogue. It is adapted for canning fruits and vegetables, cooking of stock feed, heating buildings and for running small engines or pumping machinery.

LEIGHTON, DAVENPORT & Co., Bangor, Maine, bid \$1462 and secured the contract for heating and plumbing the new Union Square Grammar School Building in that city.

AN inventor in Vienna is reported by the *Plumber and Decorator* of London to have succeeded in producing a glass which is practically a non-conductor of heat. When ¼ inch thick this glass is said to allow only 7 per cent. of sun-heat to pass through it, while plate glass of the same thickness allows 95 per cent. to pass. Such a glass should be excellent for the windows of dwelling houses, particularly of such rooms as have a southern exposure, or for work rooms lighted from the roof. Venetian or any sort of inside blinds are of little service in keeping out sun-heat with ordinary glass panes, but non-conducting glass would keep the apartment cooler than even outside shades can do. It should also keep rooms warmer in winter by refusing to conduct the heat out.

THE Board of Education of Spokane, Wash., have awarded the contract for heating the Irving School in that city to Smith & Proulx at their bid of \$2250, and the plumbing contract to Lambert & Reilly at their bid of \$700.

PITTSBURGH dispatches report that by a suit in the Common Pleas Court No. 2 the Standard Mfg. Company seek to restrain James W. Arrott and others from engaging in the manufacture and sale of Plumbing Supplies and Porcelain Lined Bathtubs.

THE Board of Trustees of the University of Wyoming will receive bids until July 21 for the erection of a central heating plant on the University grounds at Laramie, Wyo.

CHARLES W. BOYNTON has been appointed assistant plumbing inspector of Grand Rapids, Mich.

New Firms and Changes.

THE BALTIMORE REFRIGERATING & HEATING COMPANY, Baltimore, Md., have been incorporated, with a capital of \$1,000,000, to furnish steam and cold air by means of pipes laid in the streets.

THE IMPROVED HYDRO CARBON LIGHT COMPANY of Philadelphia have been incorporated with a capital of \$500,000, to manufacture Hydrocarbon Lamps and apparatus for heating purposes.

M. J. MCCARTHY has resigned his position as assistant plumbing inspector and entered into partnership with W. J. Hutchinson, at 520 Tenth street, N. W., Washington, D. C. The new firm will be known as Hutchinson & McCarthy. Mr. McCarthy will take charge of the plumbing department of the firm's business. Mr. Hutchinson having found it necessary to devote all of his time to the stove and furnace heating department of his business.

THE TOLEDO PIPE THREADING MACHINE COMPANY of Toledo, Ohio, have been incorporated with \$10,000 by C. F. Carroll, C. F. Collins, C. R. Clapp, W. W. Vosper, Henry R. Thompson and others of Toledo, to manufacture Pipe Threading Machines. It is likely that the company will not do their own work but will let the contract to outside concerns for the present.

M. A. MURRAY & SON are a new firm in the plumbing, steam and hot water heating and sheet metal working business, at Cold Spring, N. Y., M. A. Murray, who has been in this business for a number of years, having taken his son, Vincent A. Murray, into partnership with him. The new firm desire to receive catalogues from the manufacturers and jobbers of the various goods in their line.

THE BUCK DOMESTIC BURNER & FUEL COMPANY have been organized at Beaumont, Texas, with a capital stock of \$100,000 by A. T. Waller of Beaumont, E. E. Weeks of San Antonio and B. T. Clemons, W. W. Crookinger and J. M. Best of Cincinnati, Ohio, to manufacture devices for the use of crude and refined oil as fuel.

TRADE NOTES.

THE YOUNGSTOWN BRONZE COMPANY of Youngstown, Ohio, have been incorporated with a capital stock of \$25,000, by W. H. McMillen, Grant S. Jones, Hampton Casmer, J. W. Long and William Noll. The new company will rebuild and remodel the foundry built at 11 North avenue, Youngstown, adapting it for the production of Brass and Bronze Castings.

THE FURNITURE, STOVE & REPAIR COMPANY, with principal office at 185 Montgomery street, Jersey City, N. J., have been incorporated with a capital stock of \$500,000, by Jennie C. McKenzie, Arthur W. Wells and Aug. W. Turner.

THE GRASELLI CHEMICAL COMPANY, Cleveland, Ohio, are sending through the mails a colored postal card of Oriental design, calling attention to their Eureka Soldering Flux, which they recommend for use by tinsmiths and can makers.

THE partnership heretofore existing between J. W. Foley and F. Johannigmann, under the firm name of J. W. Foley & Co., has been dissolved by mutual consent. Mr. Foley has retired and the business of manufacturing Grey Iron Castings will be continued by Frank Johannigmann at the old stand, 629 to 637 West Front street, Cincinnati, Ohio.

SOUTH CAROLINA INTERSTATE AND WEST INDIAN EXPOSITION, Charleston, S. C., have awarded the following medals to F. E. Myers & Bro., Ashland, Ohio: Certificate No. 1054, bronze medal on Myers Glass Valve Seat Pumps, also on Hay Tools; Certificate No. 1178, silver medal on Myers Stayon Door Hangers. These awards are said to be the highest in their respective classes.

THE SUN MFG. COMPANY, Greenfield, Ohio, manufacturers of Cash Registers, Coffee Mills, Rat Traps, Wooden Ware Specialties, &c., have been obliged to materially increase their capacity in view of the demand for their products.

THE JENISON IRON & STEEL SHOPS, LIMITED, Grand Rapids, Mich., announce that they are prepared to make Sash Weights on a large scale. They have at present a capacity of about 20 to 25 tons daily.

THE INTERNATIONAL MICA MFG. COMPANY of Columbus, Ohio, have been chartered with a capital of \$500,000, to operate mines and works for smelting and to maintain factories for manufacturing Mica.

THE ST. LOUIS ENAMELING COMPANY, St. Louis, Mo., manufacturers of the Artistic Enameled Ranges, are equipped with facilities to do enameling work of any kind that may be required. They do a large business in the production of Enameled Steel Signs.

THE DAIRYMEN'S MFG. COMPANY of New York, manufacturers of Milk Cans, &c., have purchased a tract of land, 200 x 125 feet, on Warren, Morgan and Bay streets, Jersey City, N. J., for manufacturing purposes.

Putting Up Galvanized Iron Cornices.

BY WILLIAM NEUBECKER.

PART I.—CORNICES ON WOODEN LOOKOUTS.

The difference in construction of galvanized iron cornice work in different shops is quite important. Those accustomed to the methods of construction employed in the West would be very much at a loss in putting up work manufactured in the East, while those who know how to proceed with the latter would be considerably embarrassed in handling work manufactured in some of the interior towns. Variations in construction, as between different sections and different factories, prevail in other lines as well, but there is always a right and a wrong way, and where several plans are offered one is generally better than another. In this article the writer aims to call attention to some features of construction which, although not new, may be of help to some readers.

In Fig. 1 is shown a cornice constructed upon wooden lookouts, or brackets, and put up in a manner which experience has shown to be quite satisfactory. The brick work A is leveled off on a line with the bottom of the foot molding, and this member, B, is then set by means of the lookout C, and a strip of board, D, is nailed upon the top of them. The foot molding is formed with a drip, as shown at E, which is drawn tight against the wall and fastened to the lookout C by means of the strap F. These straps are made of No. 24 galvanized iron, 2 inches wide and as long as required. An angle

in place the edge B of the panel is turned over the edge A of the bracket, thus locking the two parts together, as shown at C.

Along the bottom of the panel Y, in Fig. 1, an edge is turned inward, as shown at H, which, meeting the edge turned upward on the top of the foot molding at I, serves as a gauge for obtaining a true line for the panel and a means of fastening it to the mold below. The two flanges are then locked together, as shown at I, and tacked with solder at intervals, thus securing a water tight joint. After the panels have been placed in

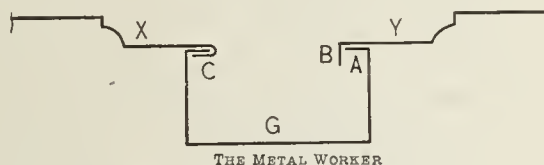


Fig. 2.—Locking the Panels.—Section through X Y in Fig. 1.

position in this manner the brick work may be carried to their top. In case the panels are very high straps should be riveted to them at intervals and secured to the brick work, thus holding them in position.

When the brick work has been carried to the top of the panels the dentil course, into which the dentils K had been fastened before the work was hoisted to the top of the building, is put in position. The lower edge of the dentil course fits back against the edge which has been bent on the top of the panels, as shown by J, thus forming a gauge by which it may be readily placed, and also forming a means of joining the two sections together from the back, which is done as described in connection with the foot molding.

After the dentil course has been placed in position the brick work and lookout may be carried to the top of it, as shown, when the strap L is riveted at M and nailed at L. In practice it is better to fasten the mo-

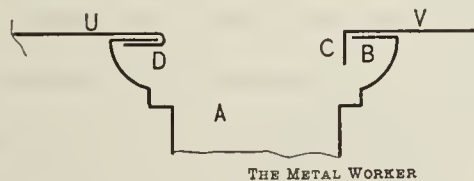
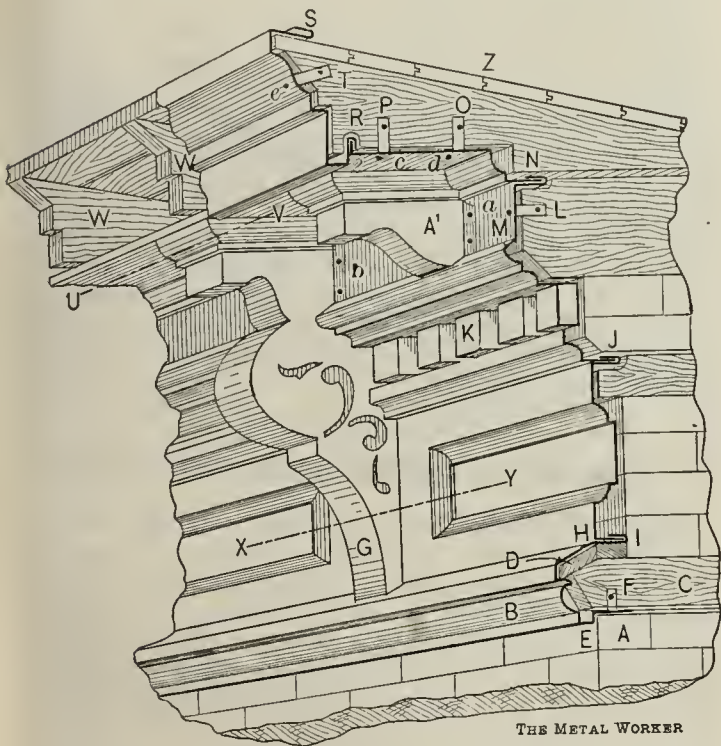


Fig. 3.—Locking the Planceer.—Section through U V, Fig. 1.

dillions A¹ against the modillion course on the ground, leaving the planceer *c d* loose, to lie flat upon the modillions and the brackets, and to be fastened in position afterward, rather than to fasten it upon the moldings on the ground. Thus the modillions A¹ can be riveted, as at *a*, on the ground before the molding is hoisted, or they can be riveted from a scaffold when putting up the work on the wall, in the same manner as the flange *b* of the bracket is riveted. Slight irregularities will occur in work of this kind, and it is therefore better to place the planceer on the modillions and brackets after they are in position, when it can be shifted one way or the other, as may be necessary to provide a straight line along its outer edge, against which to hook the crown molding at R.

The planceer, it will be noticed, is locked to the modillion course at N, strapped to the lookout W at P and O, and riveted to the planceer at *c* and *d*. Along the outer edge of the planceer an edge is bent upward, as shown at 2. The planceer may be joined to the modillions and brackets by cutting through the center of them and turning down the edges and bending them around so as to clinch with the edge in the top of the modillions and bracket, as is shown in Fig. 3, in which A is the cap of the bracket, with the edges of the cap bent inward, as shown at B. U V represents the planceer, cut out in the center, with edges bent downward as at C, after which it is clinched as at D. Instead of cutting out the entire size of the modillion and bracket, and joining in this way, only a portion of the iron



Putting Up Galvanized Iron Cornices.—Fig. 1.—Putting Up on Building on Wooden Lookouts with Locked Joints.

of 1 inch iron is riveted or soldered to the foot mold, and the top is nailed to the wooden lookout C at F. The object of the board upon the top of the lookout is to provide a solid base for the foot of the bracket G.

After the foot molding has been put in place the brick work is carried up to the top of it between the lookouts, and then the bracket G is put in place, being fastened temporarily in a plumb position by any means most convenient, the usual method being to solder the foot of the bracket directly to the top of the foot molding, and then, by a wire attached to the top of the bracket, to fasten it to the wall temporarily. The panels X and Y are next placed in position, and are fastened to the bracket G by means of a locked joint, as shown in Fig. 2, which is a section through X Y in Fig. 1. G, in Fig. 2, represents the bracket, on which the edges are bent inward on the sides, as shown by A, while the edges are turned outward on the ends of the panels, as shown by B. After a panel has been slipped

should be cut away, so as to leave as much strength in the planceer as possible.

The next step is to place in their position, in Fig. 1, the main lookouts W W W. The last operation in putting up the cornice is to hook on the crown mold, as is shown at R. The strap T is riveted to the ogee of the molding at c, and fastened to the lookout at T. A lock is placed at S to connect the roofing. While some cornice makers have different ways of putting up this class of work, this method gives good strength in the joints and makes a water tight job, as it allows for expansion and contraction, and no nails are driven into the face of the cornice.

No cornice maker who has pride in the quality of his work will allow a cornice to be simply nailed to the face of the wall, for it will bring reproach upon the sheet metal cornice trade, and will have an appearance which is anything but satisfactory to the owner or a recommendation to the cornice maker. It often happens that work is fastened to the outside, after the walls are up, because the cornice was not done on time, which is a poor excuse, when the quality of work is taken into consideration.

(To be continued.)

FORMULAS FOR DETERMINING THE CAPACITIES OF VESSELS.

BY F. W. RUDD.

Tinsmiths, plumbers and others who are called upon to make vessels of a given capacity, or to determine the capacity of vessels of a given dimension, will be interested in the formulas which I have worked out for my own convenience, and which, I think, will be found accurate enough for ordinary use. The information is more readily expressed by means of formulas, and the following key explains all of the letters used in the different formulas:

Key to Letters Used in all Formulas.

D, Large diameter.	W, Width.
d, Small diameter.	L, Length.
H and h, Hight.	V, Volume.

For Cylinders.

Volume in pounds equals $d^2 h \times 0.028407 +$.

For Cone.

Volume in pounds equals $d^2 h \times 0.009469 +$.

For Frustum of a Cone.

Volume in pounds equals $h (D^2 + D d + d^2) 0.009469$.

For a Sphere.

Volume in pounds equals $D^3 \times 0.0189386 +$.

Dimensions for above formulas to be taken in inches and decimal parts of an inch. Products found thereby represent capacities of the various shapes as if they were filled with water. These products multiplled by the specific gravity of various articles will give the capacities of the various substances—that is, weight of capacities

Dimensions of formulas below to be in inches and decimal parts of an inch.

Volume in gallons is found in following formula:

For a Sphere.

Volume equals $D^3 \times 0.002267$ (liquid standard).

For Frustum of Cone.

Volume equals $h (D^2 + D d + d^2) 0.0011333$.

For a Cylinder.

Volume equals $D^2 h \times 0.034 +$.

For Rectangular or Square.

Volume equals $W \times L \times H \times 0.004329$.

In barrels of 31½ gallons formula reads:

Volume equals $D^2 H \times 0.0001079 +$.

Rectangular and Square.

Volume equals $W \times L \times H \times 0.000137$.

Formula for dry measure, giving product in quarts and decimal parts of a quart:

For Cylinder.

Volume equals $D^2 H \times 0.01168$.

For Rectangular and Square.

Volume equals $W \times L \times H \times 0.01488$.

The decimal factors in the above formula divided by 8, 16 and 32 will give the factor to be used for pecks, half bushels and bushels, respectively.

Brooklyn Metal Ceilings and Side Walls.

The Brooklyn Metal Ceiling Company, 283-287 Greene avenue, Brooklyn, N. Y., have just issued Catalogue No. 9 covering their metal ceilings, side walls, &c. The publication is one of 72 pages, 12 x 9 inches in size, and is profusely illustrated with exceptionally good half-tone engravings. For the benefit of foreign buyers, translations of the English introduction to the catalogue given in French, German, Spanish and Italian. In the first part of the catalogue directions are provided for applying metal ceilings, with diagrams and other useful data. A feature of the company's product, to which special attention is called, is the method of finishing their metal panels in imitation of various marbles, obtaining a very fine effect. This work is claimed to be finished in a durable manner, being baked on the metal and not being liable to chip or flake off with ordinary wear. The imitations of genuine marble are very naturally produced, illustrations being given, showing panels finished in imitation of Tennessee, Sienna and Brocatel marbles, also of black and white marble, as well as some especially handsome effects in imitation of onyx. The company also make a line of enamel metal tiling in the various enameled tile finishes, including all shades, colors and mottled effects. These goods are of the same quality as their marble finishes, and are claimed to be more effective than enameled porcelain tile, as they are embossed and have a richer appearance. They are particularly recommended as an elegant wall or ceiling covering for bathrooms or stores. The nails for the marble and tile finishes are also coated, and it is said can be driven without injury to the finish. These goods are stamped up after they are finished, which gives an idea of their toughness and durability.

The catalogue contains a number of interior views showing the effects produced by the company's ceilings and side walls when placed in position. Among the illustrations are panels in Colonial, Rococo and Empire styles, also girder covers, side walls, center pieces, borders, friezes, wainscoting, coves and cornices, crown moldings and stamped ornaments of various kinds, together with metal tiles and bricks. The last pages of the publication are occupied by an index and price-list, with a telegraphic code for the convenience of customers who wish to order goods by wire. The company are also manufacturers of fire proof dumb waiter doors, covered entirely with sheet steel.

The Situation in the Welsh Tin Plate Industry.

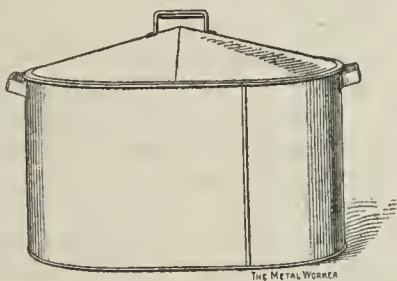
Since the Conciliation Board came into existence in the Welsh tin plate trade three years ago wage contracts have been entered into annually, and the existing contracts end on June 30. It is claimed that the three past years under conciliation have been a period of absolute freedom from serious strikes. Masters and men have brought into existence a Wage Dispute Board. This board appeared to be doing good work and making good headway until a few months ago, when the Duffryn mill men, members of the Smelters' Union, presented notices without consulting the board. The union demand for receiving payment on "area" caused some resentment among the employers, though they eventually agreed that payment should be, as asked for, on area pure and simple, the effect being to accord an advance in wages of some 2 per cent. on about 3,000,000 boxes of plates. "Canadas" and "doubles" had always been paid for exceptionally—that is, the men did not work a box up to the standard of 31,500 square inches per box on those sizes. The employers asked the men to give this up and to accept payment on area on these exceptional plates, but the men refused, and hence the dispute.

CHARLES MCSHERRY has started a general machine shop on Fifth avenue, Pittsburgh, and will build labor-saving metal working machinery and tools. Mr. McSherry is the inventor of the Hercules shears for the cutting of sheet metal of heavy gauges, and for which he is having a very large demand.

PATTERN FOR A WASH BOILER.

A wash boiler with a flat bottom, such as is shown in Fig. 1, is an article that the tinsmith is occasionally called upon to make on a special order. This is often made of IX tin with copper bottom, and sometimes entirely of 16 or 18 ounce cold rolled copper. Knowing the size of the boiler, a plan of the same is drawn, as shown in Fig. 2, in which A C is the length and B D the width, the semicircular ends being struck from the centers *a* and *b*. Edges allowed to this plan, for double seaming, will give the pattern for the bottom. The pattern for the body is usually made of such height as to avoid any waste in the metal, after the edges and wire have been allowed for; the length being obtained by taking a stretchout around the plan.

The part to which special attention must here be given is the pitched cover, which is developed on the principles of developing a scalene cone. As both halves of the cover are symmetrical, only one-half of the pat-



Pattern for a Wash Boiler.—Fig. 1.—Perspective View of Finished Boiler.

tern will be developed. Through the center *a* in plan, at right angles to *a b*, draw the diameter 1 1, as shown. Directly above the plan draw an elevation of the cover, giving the required rise J F, as shown, and draw the lines F E and F G. Divide the semicircle 1 A 1 in plan into an equal number of parts, as shown by the small figures 1 to 1, and from these points draw lines to the apex F.

F E in elevation represents the true length on the line F¹ A in plan, and before the pattern can be obtained a diagram of triangles must be constructed giving the true lengths on each of the other radial lines in plan, which are obtained as follows: With F¹ as center and with radii equal to F¹ 1, F¹ 2 and F¹ D draw arcs inter-

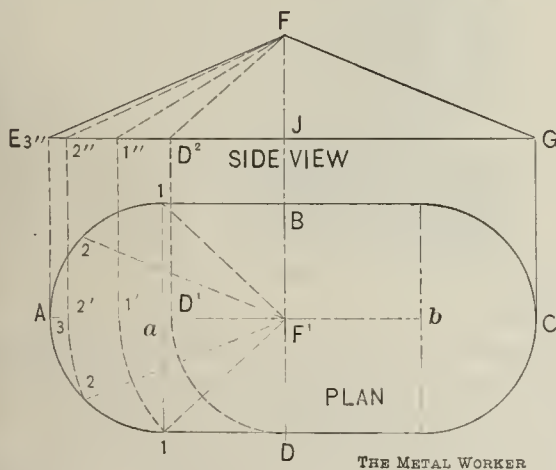


Fig. 2.—Plan, Side View of Cover and Diagram of Triangles.

secting the center line A *b* in plan at 2', 1' and D¹ respectively. From these points, at right angles to A *b*, draw lines intersecting the base line E G in elevation at 3'', 2'', 1'' and D², from which points draw lines to the apex F. Then will these lines represent the true distances on similarly numbered lines in plan.

Now, with radii equal to F 3'', F 2'', F 1'' and F D² and with F in Fig. 3 as center describe the arcs 3, 2, 2, 1 1 and D D. From the center F draw the vertical line F 3, intersecting the arc 3 at 3. Now set the dividers equal to the distances 3 to 2, 2 to 1 and 1 to D in plan in Fig. 2 and, starting from the point 3 in Fig. 3, step from one arc to another having similar numbers, thus

obtaining respectively the points 3, 2, 1, D on both sides. Trace a line through the points thus obtained, as shown by F D 3 D F, which will be the half pattern for the cover, to which laps must be allowed for seaming. The handles shown on the boiler and cover in Fig. 1 are

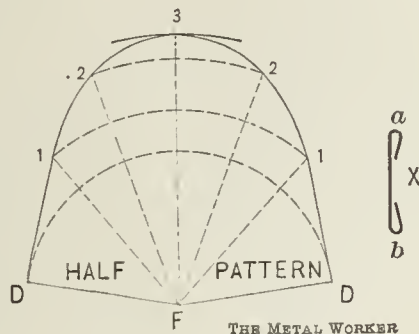


Fig. 3.—Half Pattern of Cover.

made with hem edges *a* and *b* in diagram X in Fig. 3. They are then riveted to the boiler and cover and soaked with solder.

Combination of Sheet Metal Working Machinery Concerns.

The Universal Machine Company, Canton, Ohio, who are pioneers in the manufacture and invention of long length conductor pipe, long length chain pump tubing and long length eave trough machinery, and who are also the original inventors and manufacturers of wire eave trough hanger machinery, have combined their business with that of the Canton Foundry & Machine Company, a large and prosperous concern employed in the manufacture of heavy and light castings for all purposes. The combined company are erecting large new machine shops adjoining the foundry and installing therein a full equipment of the most modern and improved machinery. The factory is centrally located in the city of Canton, on both the Pennsylvania and Wabash Railroad systems, and is close to all freight depots. The company are therefore in the best position to serve the numerous factories in their own city, and especially the sheet metal concerns, for which Canton is noted, and for whom they do a large amount of machine work. The Universal Machine Company number among their customers all the manufacturers of conductor pipe and eave trough in the United States, besides those in many other countries, as well as many sheet metal working concerns. By their new additions they will be enabled to serve their customers better than ever before, and if the demand for their products calls for it they will extend their line of regular machines as rapidly as possible, while at all times giving their closest and most prompt attention to inquiries for special sheet metal working machinery. The two partners in the Universal Machine Company, R. F. Fowler, who is a practical machinist, and William S. Yohe, who acts as secretary, are largely interested in the new company, and inquiries or orders will continue to receive their personal attention, when addressed to the Universal Machine Works or the Canton Foundry & Machine Company. The new company will continue to manufacture the Imperial hot air furnaces, hitherto made by the last named company.

THE CORTRIGHT METAL ROOFING COMPANY, 50 North Twenty-third street, Philadelphia, with Western office at 134 Van Beuren street, Chicago, have recently added to their equipment a large kettle or tank for galvanizing their Metal Slates and Victoria Shingles. These goods have become very popular in some parts of the country, because they require no paint to preserve them. The company's method is to take the Metal Slates or Shingles, which are stamped out of tin or terne plates, and after stamping to galvanize them, which insures a thorough coating, leaving no raw or cracked edges exposed. The company are prepared to send samples of these goods free to architects, contractors or roofers or any others who are interested in roofing work.

NEW INDEPENDENT STEEL WORKS AT CANTON, OHIO.

An open hearth steel plant and a blooming mill are to be erected at once in Canton, Ohio, at a cost of about \$500,000. The project is the outcome of the efforts of Edward Langenbach, who has been working upon this scheme for some months past. The prime movers in the enterprise, in addition to Mr. Langenbach, are J. E. Carnahan, Joseph Biechel, W. N. Irwin and William Blecker, who are interested in the Berger Mfg. Company, the Carnahan Tin Plate Company and the Stark Rolling Mill Company of Canton. These gentlemen will control the larger part of the capital stock of \$500,000 with which the new company will be incorporated. The title of the new concern will be the United States Steel Company, and a charter will shortly be applied for. Some outside capital has been invested, principally by Cleveland, Ohio, capitalists, including interests connected with the Cleveland blast furnace. Plans of the new plant have been drawn by Victor Buetner of Pittsburgh, and the contracts have all been closed for its speedy construction. A site of 10 acres has been secured adjacent to the Berger works, and their allied industries in Crystal Park, Canton.

The company will erect a new steel works to include a number of modern open hearth steel furnaces with a capacity of about 50 tons each, also a rolling mill, a universal plate mill and the necessary equipment for making sheet bars for the independent sheet and tin plate mills. The principal object sought by the promoters is to provide some of the independent sheet steel manufacturers with another source of supply of billets and sheet bars. Many of these manufacturers of late have found it difficult to obtain their supply of raw material from the United States Steel Corporation or any of the other steel makers. The contracts call for the completion of the mills by March 1, 1903. The plant will have a capacity of 12,000 to 15,000 tons a week, and will employ not less than 400 men. The plans include an open hearth furnace, 69 x 400 feet, and a blooming mill, 40 x 300 feet. In addition to these there will be a gas producer and power house.

The creation of this steel works will make the group of industries which center around the Berger Mfg. Company entirely independent in the matter of their supplies of raw material. The managers of these Canton industries have for some time been considering plans for the enlargement of several of the plants, but hesitated to put these plans into operation while there was any uncertainty in regard to the supply of steel. They now propose to go ahead and carry out these plans for enlargement, which have been rendered necessary by the rapid growth of their business. The Stark rolling mill and the Carnahan tin plate mills are at present undergoing their annual overhauling and repairs, and a number of improvements are being made in these works and the other industries which cluster around the Berger works.

The Perfect Elbow Patterns.

With the view of satisfying the steady demand for some method of securing patterns for elbows of all angles, G. L. Gray, Galesburg, Ill., is offering for sale, in two sets, patterns for making elbows of all sizes, from 1 to 20 inches in two, three, four and five pieces, and in all sizes from 20 to 40 inches made in five, six, seven and eight pieces, a total of 160 patterns. A small blue print sent out by Mr. Gray, showing a picture of an ordinary tinsmiths' bevel, calls attention to the various angles for which the patterns will enable the tinsmith to cut out elbows. It is claimed by those who have secured sets of these patterns and have used them that even if every tinsmith was a pattern cutter his time would be too valuable to stop and make the pattern every time an elbow of special diameter or odd angle was needed. The small chart showing the different angles for which elbows can be made is found of great benefit, particularly to furnacemen, as they can see at a glance just what pattern should be used and the number of pieces required to make an elbow of the angle

shown. In addition to elbow patterns, Mr. Gray is prepared to furnish patterns for hip, gable and single pitch skylights. All of these patterns are made on heavy blue paper, and when kept in a tin cylinder will not become destroyed by wear and can be retained clean and free from dust.

FLASHINGS.

THE JACKSON IRON & TIN PLATE COMPANY were compelled to temporarily close their works at Clarksburg, W. Va., last week, on account of an accident at the power plant. The company are manufacturing Coke Tin Plates almost exclusively. Their equipment consists of a Bar mill, eight Tin mills and five cold mills, with a tinning department containing 12 tinning machines. C. C. Moore is the general manager of the concern.

GEORGE D. EVANS, formerly manager of the Carnahan Sheet & Tin Plate Company's mill at Canton, Ohio, in connection with a number of Lisbon and Canton capitalists, proposes to build a \$200,000 Sheet mill at East Liverpool, Ohio.

THE BUCKEYE STAMPING COMPANY of Columbus, Ohio, have been organized with \$20,000 capital, to manufacture Tin Cans, Tin Boxes and Sheet Metal Specialties.

THE BINDLEY HARDWARE COMPANY, Pittsburgh, Pa., have the contract for roofing the new plant of the Burns Uniform Steel & Metallic Company, at Latrobe, Pa. They also have the contract for roofing the new \$1,000,000 plant of the Pittsburgh Packing & Provision Company, at Herr's Island.

THE WHITAKER IRON & STEEL COMPANY, Wheeling, W. Va., are adding three new Sheet mills to their plant, which will give them a total of 11 mills.

THE GEORGE P. SCHMIDT COMPANY, 1020 East Ohio street, Allegheny, Pa., have applied for a charter of incorporation to conduct a Sheet Metal working business. The incorporators are George P. Schmidt, Herman R. Schmidt, Edward C. H. Schmidt and John Feldheimer.

WE are advised by the Smith-Warren Company of Boston and New York that among a number of other orders received in the past few weeks for H. Collier Smith's Patent Shutterless Automatic Closing Fire Proof Metal Windows are the following: The Young, Smythfield Company's new store at 1220 Arch street, Philadelphia; the new factory for Jacob Bchrend at 122 West Allen street, Philadelphia; Jones, Morgan & Co.'s new store at Waterbury, Conn.; H. O. Wilbur & Sons' new factory at Bread and New streets, Philadelphia; a new warehouse for Binswanger & Co., at Richmond, Va.; a new factory for A. Schoenhut & Co. at 2162-66 Adam street, Philadelphia, and the Essex County Court House, Lawrence, Mass. The Smith-Warren Company, who control the patents for these Windows have recently closed a manufacturing agents' contract with McFarlane & Douglas, proprietors of Crown Cornice Works, Ottawa, covering the provinces of Ontario and Quebec, Canada. The company are just issuing a new catalogue and will be pleased to send copies upon request.

THE JUNIATA STEEL & IRON COMPANY, Green Castle, Ind., have awarded contracts for the tin house equipment of their new mill to the Anderson Foundry & Machine Company, Anderson, Ind.

THE WATERBURY BRASS COMPANY of Waterbury, Conn., with New York office at 122-130 Centre street, are giving special attention to the production and carrying in stock of Copper adapted for cornice and roofing work. They carry a large stock in their New York warehouse and are capable of filling orders of any size promptly. The company also have Soldering Coppers of all sizes and shapes, adapted for the use of tinsmiths, cornice men and sheet metal workers. A stock sheet, with the prices of this line of goods, can be secured on application.

THE AMERICAN CAN COMPANY have decided not to rebuild their plant at Toledo, Ohio, which was recently destroyed by fire.

It is expected that all departments of the W. H. Griffiths Charcoal Iron Mills, Washington, Pa., will be

started up within a few days. The plant consists of two Tin mills, a Tin house and charcoal forge.

HENRY F. AKIN, vice-president of the American Can Company, died on July 4 at the Waldorf-Astoria Hotel after an illness of three weeks from typhoid fever. He is survived by a widow and one son, a cadet at West Point.

THE Building Committee of the new City Hall at Ansonia, Conn., will receive sealed proposals until July 22 for the erection of the proposed structure. Bids will be received for the entire work, or the steel work and Metal Ceilings may be estimated separately.

PAUL BERTIN-MOURET, a French Tin Plate manufacturer, has been making a tour of the various large industrial plants in the Pittsburgh district.

THE following named concerns are among those who have signed the Amalgamated Association scale: Youngstown Iron, Sheet & Tube Company; Neal Bros., Pittsburgh, Pa.; Ohio Rolling Mill Company, Findlay, Ohio; American Rolling Mill Company, Muskegon, Mich.; Niles Sheet Mill Company, James A. Patterson, president, Niles, Ohio; the N. G. Taylor Cumberland Black Plate Mill, Cumberland, Md.; Sharon Tin Plate Company, Sharon, Pa., and the Empire Rolling Mill Company, Cleveland, Ohio.

OFFICIALS of the Amalgamated Association of Pittsburgh will make the bi-monthly wage adjustments next week. In the Tin Plate and Sheet scales the selling prices of the past two months will not warrant any advance to the men. In the puddling and bar iron scales it is possible the average price of shipments of iron bars in May and June may warrant a slight advance to puddlers and finishers, but this is not certain.

KRAMER BROTHERS, Dayton, Ohio, are drawing attention, by means of illustrated leaflets, to their Dayton and Gem Swing Chimney Tops, made in diameters of from 4 to 24 inches, and adapted for use with any size of stock.

The New Climax Bi-Treadle Grinder.

The new Climax bi-treadle grinder, shown herewith, is made by Schofield & Co., Freeport, Ill. The motive



The New Climax Bi-Treadle Grinder.

power used may be varied by changing the belt from the balance wheel to a pulley. The crank shaft bearing is adjustable on the center post, so the belts can thereby be tightened. All bearings are fitted with dust proof oil cups. The rest support is adjustable to any position on the center post, or can be taken off instantly if desired to leave the space about the wheel clear for convenience in polishing or buffing. The bearings for both mandrel and crank shaft are long pipe bearings and accurately fitted so the machine runs with the least possible friction.

The matter of public comfort stations is beginning to make some progress in New York City. Plans were approved this week for eight of these stations to be built in the Borough of Brooklyn. The largest, an underground one, will be located north of the Borough Hall, and will be similar to the one in the City Hall Park, Manhattan. The other stations will be on the street level.

The Modern City House.

One of the tendencies of the times in connection with the equipment of the private residences of the wealthy is to have a bathroom for every sleeping room. A case which illustrates this very well is related of a prominent architect who some 15 years ago designed a city residence for a client in which there was one bathroom; seven years later he designed another house for the same man in which there were three bathrooms, and during the past year a modern residence was planned for this man in which there were 15 sleeping rooms and 15 bathrooms. In the thoroughly up to date city residence the telephone has taken the place of the speaking tube for inside use, and there is both a local and regular telephone service, which is installed in chambers, library and halls. Electric "push buttons" for servants and for lighting are now common features, while the electric automatic elevator is a necessary adjunct of the modern city house.

New Swedish Kerosene Burner.

United States Consul Bergh of Gothenburg, Sweden, reports that a promising invention has been made by Auders Lindgren of Karlstad, who has constructed a kerosene burner which, while resembling the Auer burner, needs no pressure of carbonic acid to press up the oil and bring about its gasification. The oil is drawn up into the burner by a common wick, passes to a little ring-shaped wick, and burns with a steady and pleasant light, which also has the advantage that it is generated noiselessly. The consumption of kerosene by a lamp of 125 candlepower amounts to only 0.5 to 0.6 ore (0.134 to 0.16 cent.) per hour. Application for patent has been made in Sweden and will be made in other European countries and in America.

New Publication.

Steam Heating and Ventilation. By W. S. Munroe, M. E. Published by the *Engineering Record*, New York. Price, \$2. Size, 6 x 9½ inches; 150 pages and 90 illustrations.

The work consists of a revision for publishing in better form of a series of articles which have appeared in the *Engineering Record*. It opens with a few references to the first installations of steam heating apparatus in the early part of the last century. The first portion of the book is devoted to systems of piping and steam supply, with the various appliances for both low pressure and exhaust steam heating, followed by methods of radiator connections, and tables in reference to their efficiency for both direct and indirect radiators. Later pages are devoted to piping constructions and tables, and include plans of buildings in which the system of piping is shown and explained. Mechanical ventilation, with formulæ, is followed by descriptions of systems in operation, and methods for calculating the size of ducts and the fan required for given work, showing pictures of a hot blast plant with the fans, heaters and distributing ducts. The work closes with a well arranged index.

The Bureau of Statistics of Labor of the State of Massachusetts has just published a report containing comparisons between the Federal census of 1900 and the statistics of the State of Massachusetts for 1895, which show some remarkable changes in the industries of that State during the five years. The number of industrial establishments increased from 26,265 in 1895 to 31,953 in 1900, a growth equivalent to 21.66 per cent. The greatest gain is shown in the division of metals and metallic goods, in which is an increase of from 2209 establishments in 1895 to 3053 in 1900. Machines and machinery increased from 660 to 901 establishments in the same period. All of the industries in the State increased in the value of their products 21.82 per cent. in the five years.

It is claimed that natural gas has been struck by the Cramp Steel Company within a mile of their plant at Collingwood, Canada.

THE LETTER BOX.

Inquiries in regard to practical questions of general interest are invited, in reply to which we shall be glad to receive suggestions and information from our readers.

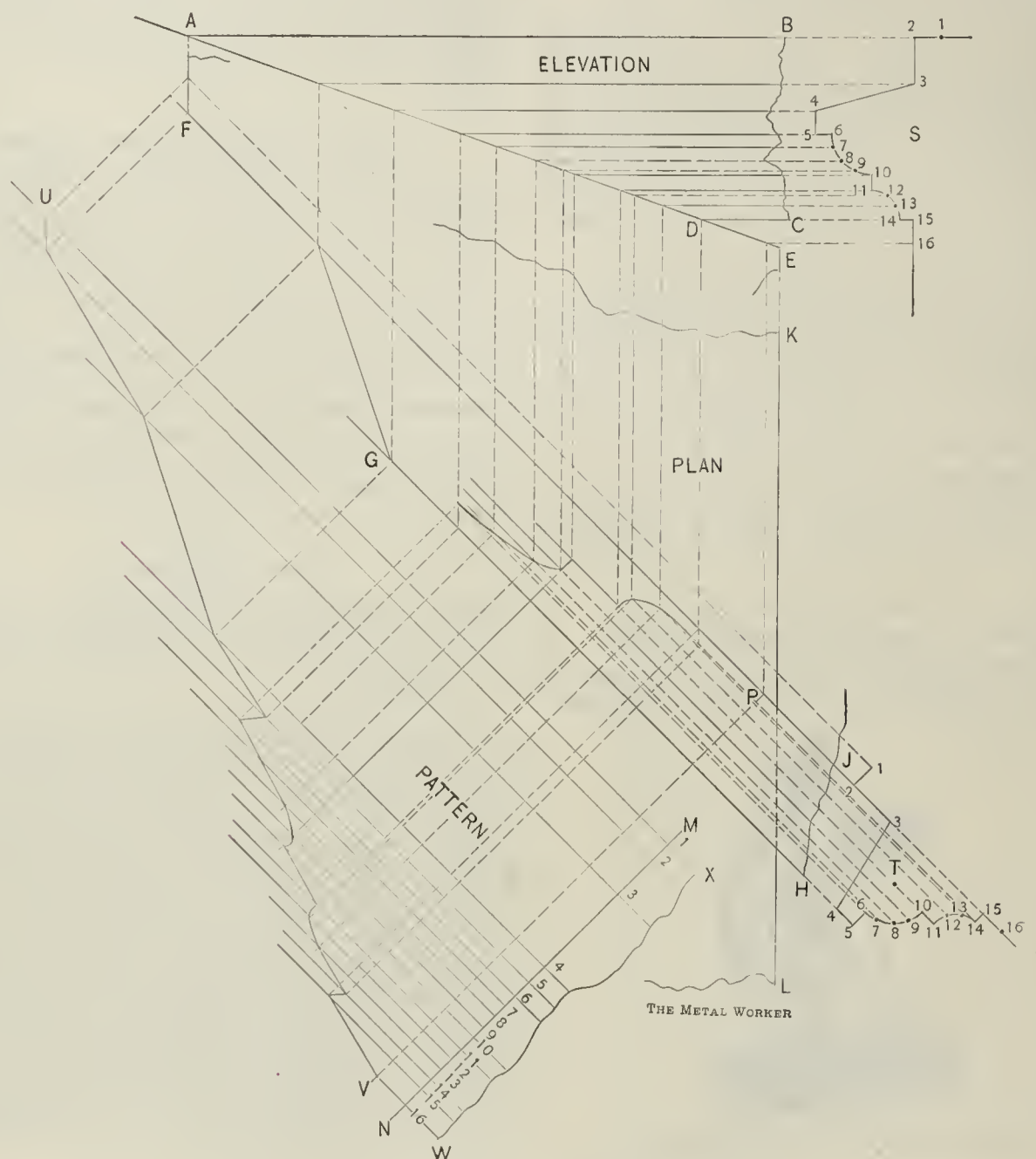
Correspondents are requested in all cases to give their names and addresses, which will not, however, be published or disclosed without their consent.

OBLIQUE INTERSECTION OF HORIZONTAL MOLDING WITH ROOF.

From H. A. McE., Chattanooga, Tenn.—I should like to have you publish in *The Metal Worker* the method of obtaining the pattern for a level molding running at an

into the same number of equal parts respectively, as shown by the small figures. From the several points and angles in profile T carry lines at the required angle with K L indefinitely, as shown, and from the points in profile S carry lines horizontally, intersecting the roof line, as shown between A and D. Finally, from the several points of intersection just obtained drop lines vertically into the plan, cutting lines of corresponding number. Lines connecting the adjacent points of intersection, as shown from F to P, will give the required plan of the intersection or miter.

To obtain the pattern a stretchout of the profile may now be set off on any line, as M N, drawn at right angles to the lines of the molding in plan, as shown by the small figures on M N. From the points so obtained on



Oblique Intersection of Horizontal Molding with Roof.

angle of 45 degrees against a roof of one-third pitch, as per inclosed sketch.

Answer.—In the accompanying diagram A B C D represents the elevation of the molding, whose profile is shown at S, and A E the pitch of the roof against which the molding is required to miter; while F G H J, the plan of the molding, shows that it is placed at an angle of 45 degrees with K L, representing the eaves of the roof or any horizontal line drawn upon the roof surface.

Before the pattern can be developed a plan of the intersection of the mold with the roof surface must be obtained. Therefore, first draw a duplicate of the profile S in the plan, as shown at T, placing its vertical lines at the required angle with K L, and its face toward the front of the plan corresponding with the elevation, and divide the curved portions of both profiles

M N draw the usual measuring lines parallel to F J indefinitely, and from the several points in the plan of the miter F G P project lines at right angles to F J, cutting measuring lines of corresponding number, as shown between U and V. A line traced through the several points of intersection will give the required miter. The complete pattern is shown by U V W X, which may be extended beyond W X to suit convenience.

WHO MAKES PENZY COAL COOK STOVES?

From Marx & Neun, St. Louis, Mo.—Will some one tell us who makes a hard coal cook stove called Penzy? We do not know if this is the name of the stove or the name of the maker. A friend lived in New York and used a stove by that name.

COPPER FOR SMOKE PIPE?

From W. J., Brooklyn, N. Y.—I desire information as to the durability of copper smoke pipe where anthracite coal is used. The pipe in this instance is to be placed in the vent flue and the smoke travels about 10 feet before entering the pipe. I feel certain that the heat will not damage it, but would like to know what experience others have had with copper smoke pipe. The information I most desire is this: What action has the soot of anthracite coal on copper? I know the soot contains sulphur and an acid that may be set free when the soot becomes damp.

IS BOILER IN BATHROOM GOOD PRACTICE?

From W. J. S., Tinsonburg, Ontario.—I would like to ask a question in reference to a simple job of plumbing. Is it good practice to place a range boiler in a room above the kitchen where the range is located? The only pressure for supply is derived from a tank 7 x 4 feet and 16 inches deep. How much higher than the boiler should the tank be placed?

Answer.—It is not uncommon to locate a boiler in the room above the kitchen, so as to derive some benefit in winter from the heat in the room in which it is placed, particularly if it is a bathroom. The small amount of heat lost by the water circulating through the pipes connecting a boiler with a water back is insignificant. The higher the supply tank is above the boiler the better will be the flow of the hot water at the hot water faucet. If the bottom of the tank is but 2 feet above the top of the boiler the pressure exerted at the top of the boiler will be about 1 pound, and if the boiler is connected with a large stove that is fired hard it is possible that steam might be generated in sufficient quantity to hold back the water from the supply tank and stop the flow from the boiler. With this information our correspondent can probably decide for himself the advisability of arranging his plumbing as he proposes.

HEATING ON BOILER LEVEL WITH STEAM.

From I. R., Norwich, N. Y.—Will *The Metal Worker* please explain the best possible method of installing a steam heating system of the low pressure type where the boiler will have to be placed on the first floor, which also must be heated by the boiler?

Answer.—Our correspondent gives too few particulars in reference to the building in which the heating system is to be installed to secure anything like a satisfactory answer. The heating surface, for instance, might be placed on the ceiling of the story on which the boiler sets. Then the condensation would run into the boiler by gravity. Again, the heating surface might be placed as usual and a sufficient pressure carried on the boiler to secure the operation of a return steam trap, or pump, to collect condensation from the radiators and throw it into the boiler. Without further details, however, it is impossible to give a more satisfactory answer.

A DEEP WELL PUMP NEEDED.

From H. L. N., Hamilton, Pa.—I have a pitcher pump in a cistern that has to raise water 26 feet through a 1½-inch pipe, and the pump works very hard. What kind of a pump should I get in order to have one that would work easy and give a good flow of water?

Answer.—The lift mentioned is just a little beyond the easy working capacity of an ordinary pitcher pump, and a deep well lift pump should be substituted for it. Pumps of this character have the cylinder located several feet below the level of the ground. A portion of the lift is due to the atmospheric pressure forcing the water up inside of the suction pipe to satisfy the tendency toward a vacuum, and if the cylinder is not more than 15 to 20 feet above the water, the water will have to be lifted the balance of the distance by a mechanical lift, through the effect of the valve of the cylinder. Pumps for this work are constructed so that there is a better

leverage at the pump handle, and, in consequence, while doing a larger amount of work, they do not seem to require quite so much power in operation.

POLISHING ZINC.

From F. S., Adams, Mass.—Will *The Metal Worker* kindly inform me what to use to keep zinc polished?

Answer.—A reliable receipt book says that zinc is generally cleaned by scouring with sand and powdered pumice. The bath used for brass, which is also effectual for zinc, is composed of 1 part nitric acid and 1 part sulphuric acid. The zinc must be washed off with clean water immediately after the bath. For large articles which cannot be dipped in the bath of acid and water apply a solution of potassium, ammonium and tartrate, thickening with sufficient clay to make a soft paste. After a few hours, rub the article with a brush dipped occasionally in fine sand, moistened with a pickle. Then polish with powdered charcoal or Vienna lime. After the zinc has been cleaned a good way to preserve its bright appearance is to give it a thin coat of some transparent varnish.

A simple way of cleaning zinc for household use is to put a teaspoonful of oxalic acid in ½ pint of water, which is ready for use when dissolved. It is only necessary to apply the wash with a sponge or soft flannel cloth to the zinc. As soon as all dirt and discoloration are removed by the action of the acid the zinc should be washed quickly with plenty of clean water. As soon as it is washed it should be rubbed dry and polished with dry whitening. It may be mentioned that elbow grease is quite a factor in securing a satisfactory polish. The strength of the wash can be varied according to necessity. A former correspondent says that he has cleaned zinc by this latter process for 35 years and can testify to its usefulness.

SHOULD CONSULT EXPERT.

From Inquirer, Cincinnati, N. Y.—Will *The Metal Worker* advise me if a small one and a half story house can be heated from a kitchen range boiler? The rooms are six or seven in number and all small, being only 7½ feet in height. I have no experience in either steam or hot water heating and cannot judge whether such a thing would be advisable if it can be done. If this is not possible, what would it cost to install a hot water heating system in this house, providing the space to be heated is not over 20,000 cubic feet? Can the boiler be set on the first floor of the house, or must it be placed in the cellar? For convenience, I would like to place the boiler in the cellar way, if an extra boiler would be required for the purpose.

Note.—It would be impracticable to attempt to heat so many rooms from the ordinary kitchen boiler. Under the circumstances it would be much better to use a special hot water boiler for the purpose. This may be set on the same floor with the radiators, but better circulation and service would be secured if it could be placed on a lower level. We should advise our correspondent to employ an expert to measure up the glass and wall surface to determine the size of the radiators needed, as calculations made from the cubic feet of space alone are not as safe as when the character and amount of the wall surface and the glass surface are considered. The expert will also be needed to determine the best way to run the flow and return pipes for the hot water heating system. The cost of the plant can only be estimated safely after the building has been studied.

Sealed proposals will be received at the office of the Supervising Architect, Treasury Department, Washington, D. C., until July 16, for furnishing and delivering Post Office lock boxes for post offices in public buildings under the control of the Treasury Department during the fiscal year ending June 30, 1903. Drawings and specifications may be obtained by applying to James Knox Taylor, Supervising Architect, Treasury Department, Washington, D. C.

TRADE REPORT.

MARKET SUMMARY.

Pig Tin is about $\frac{3}{4}$ c. higher, but dull.
Copper is quiet and slightly firmer.
Pig Lead is quiet and steady.
Spelter continues scarce and high.
Antimony is quiet and unchanged.
Nickel is in good demand and without change in price.
Aluminum is firm and in good demand.
Tin Plates are quiet, with prices a little less firm.
Black Sheets are unchanged, with large demand for Heavy Sheets.
Galvanized Sheets are dull and not so firm.
Old Metals are quiet and unchanged.
Foundry Iron is very scarce and prices nominal.
Sheet Copper is in good demand and firm in price.
Sheet Zinc has not changed; demand is moderately active.
Hardware prices are strong in all lines, with advancing tendency in some.
Stoves have been advanced 10 per cent. in price by Southern makers and 5 per cent. by Western manufacturers.
Plumbing Goods are in fair demand, with prices very strong.
Wrought Iron Pipe is scarce and high.
Wire Nails are in light demand; prices unchanged.
Cut Nails are quiet and without change.
Window Glass is moving rather slowly; prices are unchanged, but may advance.
White Lead is in fair demand and firm in price.
Spirits Turpentine is 2c. per gallon lower, and dull.
Linseed Oil is firm and higher.

METAL MARKET.

NEW YORK, July 11, 1902.

Pig Tin.—The market for Pig Tin has stiffened up materially during the week under review, following a sharp advance in London. The volume of transactions, however, was very light and the market closed dull but firm. Jobbers quote Straits Pig in small lots at 29 $\frac{1}{2}$ c. to 30c. per lb., an advance of about $\frac{3}{4}$ c. over the figures ruling at the date of our last report. It is predicted that the arrivals of Tin this month will be rather light, although about the end of the month, or the beginning of next, four direct steamers from the Straits will be due here, bringing close to 2000 tons.

Copper.—The Copper market has continued extremely dull, although its tone is steadier than it was last week. Prices are still in buyers' favor. Jobbers quote Lake Ingot in small lots at 13c. per lb., and Casting Copper at 12 $\frac{1}{2}$ c. to 12 $\frac{3}{4}$ c.

Sheet Copper.—The demand for Sheet Copper is of good proportions, and the volume of inquiry indicates a considerable consumption of this material in the coming months. Prices continue firm on the basis of 18c. per lb. for Sheet Copper from store.

Pig Lead.—Nothing beyond a hand to mouth business is being done at present in this metal. The market, however, continues steady and prices remain at the level kept for some time past. American Pig in small lots is quoted at 4.45c. to 4 $\frac{1}{2}$ c. per lb. St. Louis advices indicate a continuance of dull conditions in the market for Pig Lead at that point, with no change in prices.

Spelter.—The firmness in the market for Spelter continues unabated. Spot metal is still very scarce and prices are high, jobbers quoting good Western brands at 5 $\frac{3}{4}$ c. to 6c. per lb. St. Louis advices report a continuance of the activity in the market for Spelter noted last week, with prices mounting to a higher range.

Sheet Zinc.—The demand for Sheet Zinc is of the average proportions, and prices are unchanged at 6 $\frac{3}{4}$ c. per lb. for 600-lb. cask lots, and 7 $\frac{1}{4}$ c. to 7 $\frac{1}{2}$ c. for smaller quantities.

Antimony.—This metal is firm and unchanged. Cookson's is quoted in small lots at 10 $\frac{1}{2}$ c. to 11c. per lb., Hallett's at 8 $\frac{7}{8}$ c. to 9c., and U. S. 8 $\frac{1}{2}$ c. to 8 $\frac{7}{8}$ c.

Nickel.—There is no change in the market for this metal. Small lots are quoted at about 55c. per lb.

Aluminum.—The demand continues active, and prices are without change. Small lots of No. 1 Ingot, guaranteed 99 per cent. pure, are quoted at 37c. per lb., and 100-lb. lots at 35c.

Tin Plates.—The market for Tin Plates is without any change worthy of note. Comparatively little business of any amount is being done in this market. Small retail orders constitute about the only transactions that have been effected. Prices are unchanged, jobbers quoting American Bessemer Coke Plates, IC, 14 x 20, in moderate sized lots, delivered in New York or corresponding points, at about \$4.75 to \$4.90 per box. Cable advices report a further decline of 1 $\frac{1}{2}$ d. in the price of Welsh Plates, which now rule at 13s. 4 $\frac{1}{2}$ d., Swansea.

Sheets.—The Sheet market is quiet, except for the heavier gauges, for which there is a good demand, and on which the mills are still considerably behind in their orders. A number of the Sheet mills have been closed down for repairs and stock taking, and operations at others are being suspended on account of the slight demand. Some buyers are seeking to place orders for long time deliveries, but most of the manufacturers hesitate to accept contracts of this kind, and prefer to do a regular business at the ruling rates. Galvanized Sheets are quite dull, and prices on this line have softened considerably. Jobbers quote No. 27 One Pass Cold Rolled Soft Steel Sheets at 3.75c. to 3.80c., and No. 24 Galvanized at 4c. to 4.20c.

Chicago advices are as follows: Heavy Sheets are still well sustained, but all others continue slow and weak, with liberal discounts allowed, especially on Galvanized Sheets. No. 27 Black Sheets in small lots from store are quotable at 3.45c. to 3.55, while Galvanized Sheets in small lots are held at 4.70c. to 4.75c. for No. 27.

Old Metals.—Demand is light for all kinds of Scrap Metals at the moment, but prices show no quotable change. Dealers are paying about the following rates for moderate sized lots, delivered at New York or corresponding points:

Heavy Copper.....	per lb.	10 c.
Light and Tinned Copper.....	per lb.	9 c.
Heavy Brass.....	per lb.	8 c.
Light Brass.....	per lb.	6 $\frac{1}{2}$ c.
Lead.....	per lb.	3 $\frac{3}{8}$ c.
Tea Lead.....	per lb.	3 c.
Zinc.....	per lb.	3 $\frac{1}{4}$ c.
Pure Aluminum Sheet.....	per lb.	22 c.
Cast Aluminum.....	per lb.	17 c.
No. 1 Pewter.....	per lb.	18 c.
No. 2 Pewter.....	per lb.	9 c.
Tin Plate Scrap, per gross ton.....		to \$5.00
Wrought Iron Scrap, per gross ton.....		\$13.00 to 13.50
Heavy Cast Scrap, per gross ton.....		12.00 to 12.50
Stove Plate Scrap, per gross ton.....		8.50 to 9.00
Burnt Iron, per gross ton.....		7.00 to 7.25

THE PIG IRON MARKET.

NEW YORK.—There has been no material change in the Pig Iron situation. The situation in the Lehigh Valley continues exceedingly unsatisfactory, while better reports come from Virginia. The latest telegrams from Birmingham indicate that the coal miners' strike in that district will be settled. It is difficult to quote American Pig Irons for nearby delivery, and the following figures are nominal: Northern Iron, at tidewater, No. 1 X, \$23.50 to \$25; No. 2 X, \$22.75 to \$23.50; No. 2 Plain, \$22.25 to \$22.50. Tennessee and Alabama brands are quoted as follows: No. 1 Foundry, \$22.50 to \$23.50; No. 2 Foundry, \$21.75 to \$22.50; No. 3 Foundry, \$21.25 to \$21.75.

CHICAGO.—The result of the scarcity of Pig Iron and the lack of Coke has been an advance of \$2 to \$3 per

ton on Southern Iron for delivery during the remainder of the year. For immediate shipment, even higher premiums have been paid. Most consumers of Pig Iron in the West are facing very serious conditions, and in many instances are obliged to pay excessive prices or suspend work. The market is being literally scoured for prompt delivery Iron. Further large sales of Iron for delivery during the first half of next year are reported. Seventeen dollars seems to be the accepted base for No. 2 Southern Foundry at Birmingham, while \$21 is the prevailing price for No. 2 Northern Foundry, Chicago. The market for spot and early delivery Iron is unsettled and prices irregular. The following are the approximate prices current at the close of the week for delivery during the third and fourth quarter of the year:

Lake Superior Charcoal.....	\$25.00 to \$26.00
Local Coke Foundry, No. 1.....	22.00 to 22.50
Local Coke Foundry, No. 2.....	21.00 to 21.50
Local Coke Foundry, No. 3.....	21.00 to 21.50
Local Scotch, No. 1.....	22.50 to 23.00
Ohio Strong Softeners, No. 1.....	24.00 to 25.00
Southern Silvery, according to Silicon.	24.65 to 25.15
Southern Coke, No. 1.....	24.15 to 24.65
Southern Coke, No. 2.....	23.65 to 24.15
Southern Coke, No. 3.....	23.15 to 23.65
Southern Coke, No. 1 Soft.....	24.15 to 24.65
Southern Coke, No. 2 Soft.....	23.65 to 24.15

PHILADELPHIA.—There has been practically nothing done in the Pig Iron market during the past week. The scarcity of metal continues with no indications of improvement in sight. Sellers are virtually sold up for some time ahead and are making no offerings. There is no tendency toward concessions for next year's deliveries, the only guarantee for delivery being a promise to ship as early as possible. A fair average of prices for deliveries in buyers' yards or nearby points would be about as follows for deliveries during the last quarter of the year, July, August and September deliveries being anywhere from \$1 to \$2 higher:

No. 1 X Foundry.....	\$23.50 to \$24.50
No. 2 X Foundry.....	22.75 to 23.50
No. 2 Plain.....	22.25 to 22.50

PITTSBURGH.—The hot weather and short supply of Coke are combining to keep down the output of Pig Iron, and the immediate supply is shorter than ever. Many of the Valley furnaces are not making more than half their usual product, and until the Coke situation improves the present scarcity of metal will continue. There is a good deal of buying of Foundry Iron, and sales are being made for delivery into the first half of next year. No. 2 Foundry is quoted at \$21.50 to \$22. Pittsburgh.

CINCINNATI.—The general situation in the Pig Iron market shows no material change this week, except that there is a better understanding about prices for Southern brands. The amount of Foundry Iron for next year's delivery continues to be very small. Some sellers hold to the idea that Iron is worth up to \$20. Birmingham basis for No. 2 Foundry, and others say they have been selling in a small way at \$19 for this year's delivery. One large Southern industry continues to sell freely for next year on the basis of \$16.50, Birmingham, for No. 2, but others are holding to \$17. We quote, f.o.b. Cincinnati for 1902 delivery as follows:

Southern Coke, No. 1.....	\$21.25 to \$22.25
Southern Coke, No. 2.....	20.75 to 21.75
Southern Coke, No. 3.....	20.25 to 21.25
Southern Coke, No. 4.....	19.75 to 20.75
Southern Coke, No. 1 Soft.....	21.25 to 22.25
Southern Coke, No. 2 Soft.....	20.75 to 21.75
Ohio Silvery, No. 1.....	24.60 to 25.10
Ohio Silvery, No. 2.....	24.10 to 24.60
Lake Superior Coke, No. 1.....	25.10 to 25.60
Lake Superior Coke, No. 2.....	24.60 to 25.10
Lake Superior Coke, No. 3.....	24.10 to 24.60

St. Louis.—The market conditions differ very little from those given in our last report. The volume of demand and inquiry continues light. The continued scarcity of offerings has resulted in a higher range of values, and the matter of prices depends largely upon the urgency of the demands of the buyer. It is said that a number of concerns using Iron and having more than enough on hand for immediate needs have turned sellers, taking advantage of the present high range of prices. This accounts to some extent for some remarkably high figures. The following is the range of prices current for cash, f.o.b. St. Louis:

Southern, No. 1 Foundry.....	\$21.50 to \$23.50
Southern, No. 2 Foundry.....	20.75 to 22.75
Southern, No. 3 Foundry.....	20.25 to 22.25

Southern, No. 4 Foundry.....	to 19.00
No. 1 Soft.....	21.25 to 23.25
No. 2 Soft.....	20.75 to 22.75

CHICAGO REPORT.

Scrap Iron and Steel.—The offerings of Country Scrap are only moderate and with a fair outlet, notwithstanding most of the mills in this section are still closed for repairs. The market remains firm. Dealers buy offerings in carload lots, Chicago delivery, as follows:

	Per net ton.
Country Wrought Scrap.....	\$14.00 to \$14.50
Machinery Cast.....	to 13.50
Malleable Cast.....	12.00 to 13.00
Stove Plate (free from burnt).....	to 9.50
Burnt Iron and Grate Bars.....	8.00 to 9.00
Sheet Iron and Hoops.....	8.00 to 9.00
Plow Steel.....	12.00 to 13.00
Breaking Stock.....	to 11.00
Old Boilers—whole (Iron).....	9.50 to 10.00
Old Boilers (Iron) cut in single Sheets and Rings.....	12.00 to 12.50
Old Gas Pipes and Boiler Tubes.....	12.00 to 12.50
Cast Borings.....	8.50 to 9.00
Turnings.....	12.00 to 12.50
Horseshoes.....	14.00 to 14.50

Old Metals.—The market for Copper and Brass has continued slow and easy, with Red and Light Brass a little lower, but other kinds are well sustained. The demand is only moderate. Zinc has remained firm with an improved demand. The following prices are being paid by dealers in this market:

	Per lb.
Copper Wire and Heavy.....	10 $\frac{3}{4}$ c.
Copper Bottoms.....	9 $\frac{3}{4}$ c.
Copper Clips.....	10 $\frac{1}{2}$ c.
Red Brass.....	10 $\frac{1}{4}$ c.
Yellow Brass.....	8 $\frac{1}{4}$ c.
Red Brass Borings.....	9 $\frac{3}{4}$ c.
Yellow Brass Borings.....	7 $\frac{1}{2}$ c.
Light Brass.....	6 to 6 $\frac{1}{2}$ c.
Pipe Lead.....	3.70c.
Tea Lead.....	3.35c.
Zinc.....	3 $\frac{1}{4}$ c.
Tin Foil.....	21 c.
Pewter, No. 1.....	18 c.
Pewter, No. 2.....	11 c.
Aluminum.....	20 c.

Old Rubber.—There has been a steady market, with moderate offerings and a fair outlet except for Outside Bicycle Tubing, for which dealers have reduced quotations. The following are the prices paid by dealers in this market:

	Per net ton.	Per lb.
Garden Hose.....	\$25.00	.....
Air Brake Hose.....	45.00	.....
Rubber Shoes.....	.....	7 c.
Rubber Car Springs.....	.....	5 c.
Inside Bicycle Tubing.....	.....	22 c.
Outside Tubing.....	.....	5 $\frac{3}{4}$ c.
Black Rubber.....	.....	4 c.
White Rubber.....	.....	8 $\frac{1}{2}$ c.

Rags.—The offerings have continued quite free, and dealers have been slow buyers, yet prices are without essential change. Dealers buy desirable offerings at 65c. to 75c. per 100 lbs., Chicago delivery.

Anthracite Coal.—The market has been quiet, the new demand showing but little, if any, improvement while stocks have been ample. There has been a fair movement on contracts. The following are the prices current, subject to a discount of 20c. per ton for shipments made during the month of July:

	Grate.	Egg and Stove.
Chicago.....	\$5.75	\$6.00
Milwaukee, Wis.....	5.75	6.00
St. Louis.....	6.20	6.45
Kansas City, Mo.....	8.25	8.50

"PUMP PROFIT" is the title of an attractive booklet, the latest publication of the Berger Mfg. Company, Canton, Ohio, issued in the interest of their Twentieth Century Corrugated Galvanized Steel Pumps. The little work is printed and illustrated in red and black, and contains, in crisp sentences, points of information regarding the construction, merits and uses of these up to date substitutes for the old fashioned wooden Pump.

United States Consul S. S. Lyon of Hiogo, Japan, reports that 18 spacious buildings are being erected for the International Exposition to be held at Osaka from March to July, 1903. They are being constructed of wood and covered with galvanized sheets. At the northern entrance will stand a tower 90 feet high and provided with an elevator. From this tower visitors will have an excellent view of the surrounding country.

THE HARDWARE TRADE.

Manufacturers and the jobbing trade agree in reporting a very satisfactory condition of things. The results of the business of the past six months are such as to encourage them in an enterprising prosecution of their interests, with, in many cases, increased facilities for the making and selling of goods. Much attention, as usual at this time, is being given to completing arrangements for the fall campaign, including such matters as the overhauling of plants, revising quotations, instructing travelers, general consideration of business methods and in various ways maturing plans for an active season. The vacation period and the effect of the summer months naturally interfere a good deal with the activities of the trade, and the lull in the receipt of orders is not unwelcome. Manufacturers are looking for an opportunity to replenish their depleted stocks, but the indications point to an entrance on the fall business with a materially smaller supply of goods than for many years. The jobbers have for the most part covered their requirements for several months to come, and their orders are accordingly comparatively light, but still aggregate a very respectable amount. It is not found a difficult thing to sell goods in the present state of the market, and manufacturers do not find it necessary to make special efforts in this direction. The trade are, with few exceptions, buying freely to cover their needs for the fall, but while there is a hopeful and even sanguine feeling that business is to continue in large volume, there is a conservatism as to placing orders beyond what the trade is pretty sure to readily absorb. With a strong and confident market there is recognition by prudent and farseeing merchants and manufacturers that prices are abnormally high, and that when a reaction comes there must be a material shrinkage in values. In this way the market is restrained from an abnormal activity which might have injurious effects, and the caution thus exercised will doubtless have its influence in tending to postpone the time when the supply will exceed the demand and the effect of competition with greatly increased manufacturing facilities will subject the market to the test under which it is assumed that, in accordance with the laws of trade, it must give way. While opinions differ as to when this will happen there is a pretty general agreement in anticipating a continuation of existing favorable conditions during at least the fall trade.

NOTES ON PRICES.

Plumbers' Supplies.—Local trade in the plumbing line is still rather quiet, but out of town business keeps up in good volume. Prices of Plumbing Goods in practically all lines are strong, especially in Iron Goods, where an advancing tendency is apparent, due to the extremely high prices ruling in the market for the raw material.

Wrought Iron Pipe.—One of the features of the Wrought Iron Pipe market at the present time is the fact that all of the large mills have so oversold their capacity that the jobbing trade is not able to obtain the Pipe due to them. It is said that the mills are asking a premium on the present quotations for prompt shipments. This state of things is creating considerable friction and has caused annoyance to the jobbing as well as to the retail trade owing to the fact that the jobbers have oversold their capacity to deliver and are now compelled to employ all imaginable expedients in order to live up to their obligations. One of the largest jobbing houses in New York was in the market this week for a large quantity of Pipe for prompt shipment, and the only mill that could fill the order, which consisted chiefly of small sizes, named six weeks as its earliest shipping date. This delivery precluded the placing of the order for mill shipment and the jobber was compelled to purchase the Pipe in the local market. The question of a change of price is said to hinge upon the development of an enterprise which is being promoted by the officers of the leading Pipe interest. It was said the early part of the week that this enterprise had fallen through, but a report comes from authori-

tative sources to the effect that options have been extended, and that there is a good prospect of the consolidation being consummated.

Egg Openers.—The prices to the trade on Hartigan's Patent Egg Opener, made by Wm. R. Hartigan, Collinsville, Conn., are \$2 per dozen for the nickel plated, and \$4 per dozen for the silver plated.

Wire Nails.—The output of Wire Nails has been reduced by the shutting down of many of the mills for the annual repairs and clean up. Jobbers' stocks generally are light, and some complaint is heard of delay in getting shipments from mills. The local demand from store has been light, owing to holiday interruptions. Small lots of Wire Nails from store continue at \$2.30 per keg, New York.

Cut Nails.—The demand for Cut Nails in the New York market is light. Prices are unchanged, small lots from store being quoted at \$2.30 per keg.

Window Glass.—The demand in the East for Glass is small, while in the West it is much larger. The Jobbers' Association quotations for Single and Double Strength Glass continue at 88 and 5 per cent. discount for lots from store. A meeting of the Window Glass manufacturers is being held in Cleveland, Ohio, and an advance in prices is regarded as likely.

White Lead.—The demand for White Lead in Oil is not so large as in June, but a fair quantity is being consumed. Prices are without change, small lots of White Lead in Oil from store being quoted at 6½ to 6¾ cents per pound.

Spirits Turpentine.—The Turpentine market has declined during the week under review, which has had the effect of stimulating buying. A strong market, however, is reported at Savannah, which may cause an advance in local prices again. Jobbers' prices for small lots of Turpentine are 48 to 48½ cents per gallon.

Linseed Oil.—The demand for Linseed Oil is of good proportions, and prices are higher. City Raw, in small lots, is quoted at 68 to 68½ cents per gallon.

Rules for Electrical Wiring.

In discussing the question of safe rules in wiring for electrical work a writer in a recent issue of *Electricity* presents the following:

A workman should thoroughly familiarize himself with the rules and requirements of the National Board of Fire Underwriters before attempting to do any electrical construction. The rules are all based on good engineering practice, and are a necessity for the prevention of unreliable and dangerous work. A few of the more important suggestions given in the code and applicable to all electric light, heat or power construction are as follows:

In all electric work, conductors, however well insulated, should be treated as bare, to the end that under no conditions, existing or likely to exist, can a grounding or short circuit occur; and so that all leakage from conductor to conductor, or between conductor and ground, may be reduced to the minimum.

In all wiring special attention must be paid to the mechanical execution of the work. Careful and neat running, connecting, soldering, taping of conductors and securing and attaching of fittings, are specially conducive to security and efficiency, and will be strongly insisted upon.

Wires must not be of smaller size than No. 14 B. & S., except when used for wiring fixtures or by special permission. Wires must be separated from contact with walls, floors, timbers, or partitions through which they may pass by noncombustible, nonabsorptive insulating tubes, such as glass or porcelain. Bushings must be long enough to bush the entire length of the hole in one continuous piece.

Transformers must not be placed inside of any building, excepting central stations, unless by special permission of the inspection department having jurisdiction. They must not be attached to the outside walls of buildings, unless separated therefrom by substantial supports.

Switches must be placed on all service wires, either overhead or underground, in a readily accessible place, as nearly as possible to the point where the wires enter the building, and arranged to cut off the entire current. Knife switches must be so placed that gravity will tend to open rather than close the switch. They must not be single pole, except where the circuits which they control supply not more than six 16 candle power lamps, or their equivalent.

Automatic fuse cut outs must be placed on all service wires, either overhead or underground, as nearly as possible to the point where they enter the building and inside the walls, and arranged to cut off the entire current from the building. They must be placed at every point throughout a system, where a change is made in the size of wire (unless the cut out in the larger wire will protect the smaller). All cut outs must be in plain sight, or inclosed in an approved box, and readily accessible. They must not be placed in the canopies or shells of fixtures.

Circuits or groups of incandescent lamps requiring more than 660 watts must not be dependent on one cut out. Special permission may be secured for departure from this rule in case of large chandeliers, stage borders and illuminated signs.

The following is a table showing the safe carrying capacity of conductors of different sizes in B. & S. gauge as given in the rules:

B. & S. gauge.	Rubber covered wires. Amperes.	Weather proof wires. Amperes.	Circular Mils.
18	3	5	1,624
16	6	8	2,583
14	12	16	4,107
12	17	23	6,530
10	24	32	10,380
8	33	46	16,510
6	46	65	26,250
5	54	77	33,100
4	65	92	41,740
3	76	110	52,630
2	90	131	66,370
1	107	156	83,690
0	127	185	105,500
00	150	220	133,100
000	177	262	167,800
0000	210	312	211,600

No fuse must have a rated capacity exceeding the allowable carrying capacity of the wire it protects.

In open work wiring supports must be placed at no greater distance than 4½ feet apart.

The Tin Plate Wage Scale.

No agreement was arrived at by the representatives of the American Tin Plate Company and the Amalgamated Association, who met in New York last week for the purpose of considering the foot notes included in the wage scale for 1902-1903. The Amalgamated men wanted time to consider the scale offered by the company and suggested an adjournment. The conference will be resumed at a later date, which has not yet been decided. In the meantime the men will continue at work, in compliance with their agreement of last April, which provides that in case of the failure of immediate decision regarding the 1902-1903 schedule they continue at work for the balance of 1902. The new scale, if agreed upon, will, however, take effect beginning July 1 of this year. The American tin plate officials present were: Warner Leeds, first vice-president, and District Managers J. R. Phillips, William Banfield, Cecil A. Robinson and Berthold Goldsmith. The base of the scale has already been fixed and the present controversy is only regarding the foot notes as printed in *The Metal Worker* under the date of June 28.

Considering that only about 15 per cent. of skilled mechanics, according to the statistics, really belong to labor unions, the friends of liberty and equality, says an exchange, will not be sorry to hear that Corporation Consul Rives, in New York, has given his opinion that city authorities cannot legally provide in contracts that only members of unions shall be employed on the work contemplated by the contract, for the reason that such a stipulation establishes an illegal and unconstitutional

discrimination between different classes of citizens, at the same time that, by excluding from city contracts all but certain privileged persons, it prevents competition among contractors.

The directorate of the Louisiana Purchase Exposition, to be held in St. Louis in 1904, being desirous of obtaining an emblem expressive of the importance of the event, have issued an invitation to artists to submit designs either in relief or in color, the final decision to be rendered by a jury, consisting of two painters, two sculptors, two architects and a historian. A prize of \$2000 is offered for the best design submitted. The competition is open until November of the present year, and full information is obtainable from Walter B. Stevens, secretary, Louisiana Purchase Exposition, St. Louis, Mo.

CONTENTS.

Editorials—	Page.
A Strong Iron Market	33
The Acetylene Convention.....	33
Plumbers' Day.....	33
End of the Illinois Anti-Trust Law	34
A Half Year's Fire Loss	34
Meeting of Southern Stove Manufacturers' Association.....	35
Hints to Furnacemen—The New Creed. Illustrated.....	35
Watson's Portable Stove or Oven. Illustrated.....	36
Rules Governing the Proportions of Warm Air Furnaces, and Amount of Space They Will Heat Under Ordinary Conditions....	36
Reliable Ranges and Heaters.....	37
The Crown Low Down Warm Air Furnace. Illustrated.....	37
Western Stove Prices Advanced.....	38
The Stove Founders' Defense Association.....	38
Odd Plates	38
Buckeye Pumps. Illustrated.....	39
The 1902 Steel Framed Roll Paper Holder and Cutter. Illustrated..	39
Steel Pump Oilers. Illustrated.....	39
The Manufacture of Enameled Ware in America.....	40
Carnahan Stamping & Enameling Company.....	40
A Rack for Balls of Twine. Illustrated.....	40
Stove and Hardware Dealers.....	40
A Tunnel Construction for Underground Steam Pipes. Illustrated.	41
Saunders Pipe Machines.....	41
Piping Under Difficulties. Illustrated.....	42
The Improved Tread-Kill Shaking Grate. Illustrated.....	43
Central Station Heating.....	43
A Swiveling Joint for a 16-inch High Pressure Steam Main. Illus..	44
New Plant for the J. L. Mott Iron Works.....	44
Boiling Points of Water at Different Heights of Vacuum.....	45
Soft Coal and Water.....	45
The Standard Boilers.....	45
A Steam Goods Catalogue.....	45
An English Method of Heating Cars.....	45
Cold and Hot Water Service Piping. Illustrated.....	46
The Canton Heaters	46
Heating and Plumbing Notes.....	47
New Firms and Changes.....	48
Trade Notes	48
Putting Up Galvanized Iron Cornices. Illustrated.....	49
Formulas for Determining the Capacities of Vessels.....	50
Brooklyn Metal Ceilings and Side Walls.	50
The Situation in the Welsh Tin Plate Industry.....	50
Pattern for a Wash Boiler. Illustrated	51
Combination of Sheet Metal Working Machinery Concerns....	51
New Independent Steel Works at Canton, Ohio.....	52
The Perfect Elbow Patterns.....	52
Flashings.....	52
The New Climax Bi-Treadle Grinder. Illustrated.....	53
The Modern City House.....	53
New Swedish Kerosene Burner.....	53
New Publication.....	53
The Letter Box—	
Oblique Intersection of Horizontal Molding with Roof. Illus. .	54
Who Makes Penzy Coal Cook Stoves ?.....	54
Copper for Smoke Pipe ?.....	55
Is Boiler in Bathtub Good Practice ?.....	55
Heating on Boiler Level with Steam.....	55
A Deep Well Pump Needed.	55
Polishing Zinc.....	55
Should Consult Expert.....	55
Trade Report—	
Market Summary.....	56
Metal Market.....	56
The Pig Iron Market.....	56
Chicago Report.....	57
The Hardware Trade.....	58
Notes on Prices.....	58
Rules for Electrical Wiring.....	58
Metal and Miscellaneous Prices.....	60
Labor Exchange—	
Help and Situations Wanted	64

ROOFING SUPPLIES, METALS, TIN PLATES, &c.

REVISED JULY 10, 1902.

Aluminum—			
No. 1 Aluminum (guaranteed over 99% Pure), in ingots (for remelting).			
Small lots.	lb.	37¢	
100-lb. lots.	lb.	35¢	
Aluminum Sheet, B. & S. gauge.			
In lots of 50 lbs. or more.			
Wider than.	6-in.	14-in.	24-in.
And including.	14-in.	24-in.	30-in.
Nos. 13 to 19.	\$0.42	\$0.44	\$0.47
" 20.	.44	.46	.49
" 21 to 23.	.46	.48	.51
" 24.	.46	.50	.53
" 25.	.47	.51	.54
" 26.	.47	.54	.59
" 27.	.48	.57	.62
" 28.	.48	.57	.64
" 29.	.49	.60	.69
" 30.	.50	.64	.77
Note.—Lots of less than 50 lbs. 5¢ lb. extra.			

Antimony—	
Cookson.	lb. 10¢ @ 11¢
Halpelt's.	lb. 8½¢ @ 9¢
U.S.	lb. 8½¢ @ 8¾¢

Brass, Roll and Sheet..... 30%

Conductors—
Corrugated.

Round or Square.—
Galvanized ½ or more, N'st'd..... 70 & 10%

Not Nested..... 70 & 5%

" Plain Round, ½ or more, 70 & 10%

Nested..... 70 & 5%

Galvanized, Plain Round, Not Nested..... 70 & 5%

Spiral Lock Seam Pipe—
Galvanized..... 60 @ 60 & 10%

Spiral Riveted..... 40%

See also Elbows and Shoes; Eave Trough Miters; Strainers, Conductor.

Conductor Strainers—
See Strainers, Conductor

Copper—
Lake Ingot..... 13 @ 13½¢

Casting..... 12½ @ 12¾¢

Sheet and Bolt..... 18¢ @ 18½¢ basis

Cold Rolled Sheets..... 19¢ @ 19½¢ basis

Cold Rolled and Polished Sheets..... 20¢ basis

Planished Sheets..... 21¢ basis

Bottoms, Pits and Flats..... 22¢ basis

Eave Trough Galvanized

Territory L. C. L.

Eastern..... 75 & 10%

Central..... 75 & 7½%

Southern..... 70 & 12½%

S. Western..... 70 & 10%

Terms, 2% for cash.

Eave Trough Miters—
Lap or Slip Joint..... list, 25%

Elbows—Plain Adjustable—
Eastern List.

Tin..... 30%

Galvanized..... 30%

Perfect Elbows..... 40%

Stove Pipe—
Four-Piece

4 4½ 5 5½ 6-Inch.

No. 1, \$0.80 .85 .90 1.00 1.05 per doz.

No. 2, .85 .70 .75 .80 .85

No. 3, .60 .63 .65 .70 .80

Elbows and Shoes—
Galvanized..... 60%

Casoline—
See Petroleum Products.

Iron Sheet—Black.			
One Pass, C. R.	R. G.		
Soft Steel.	Cleaned.		
Nos. 14 to 18.	lb.	3.40	3.45¢
Nos. 18 to 21.	lb.	3.50	3.55¢
Nos. 22 to 24.	lb.	3.60	3.65¢
Nos. 25 and 26.	lb.	3.70	3.75¢
No. 27.	lb.	3.80	3.85¢
No. 28.	lb.	3.90	3.95¢

Russia, Planished, &c.
Genuine Russia, accord-
ing to assortment..... lb 11 @ 14 ¢
Do. Stained..... 6 @ 10½¢
Patent Planished, lb A, 11¢; B, 10¢ net

Galvanized.			
Nos. 14 and 16.	lb.	3.45 @ 3.60¢	
Nos. 18 and 20.	lb.	3.70 @ 3.90¢	
Nos. 22 and 24.	lb.	4.00 @ 4.20¢	
No. 26.	lb.	4.25 @ 4.50¢	
No. 27.	lb.	4.55 @ 4.80¢	
No. 28.	lb.	4.85 @ 5.10¢	
No. 30.	lb.	6.00 @ 6.30¢	
No. 20 and lighter, 36 inches wide, 25¢ higher.			

Lead—	
American Pig.	4.45 @ 4½¢
Bar.	5 @ 5½¢
Pipe.	6½¢ @ 2½¢ off
Tin Lined Pipe.	12½¢ @ 20¢ off
Block Tin Pipe.	42½¢ @ 20¢ off
Sheet Lead.	7½¢ @ 20¢ off
Old Lead in exchange, 3½¢ lb. d.	

Mitres Eave Trough—
See Eave Trough Miters.

Nickel—
Per lb..... 55 @ 60¢

Paints Oils &c.—

Leads—
Lead, American White, in Oil:

Lots of 500 lb. or over..... 6¼ @ 6½

Lots less than 500 lb..... 6½ @ 6¾

Lead, White, in oil, 25 lb tin

pails, add to keg price..... @ ½

Lead, white, in oil, 1½ lb tin

pails, add to keg price..... @ 1

Lead, White, in oil, 1 to 5 lb as-

sorted tins, add to keg price..... @ 1½

Lead, White, Dry in bbls..... 5¼ @ 6

Lead, Red, bbls, ½ bbls. and kegs:

Lots 500 lb. or over..... @ 6

Lots less than 500 lb..... @ 6½

Oils—

Linseed, City, raw..... gal. 68 @ 68½¢

Linseed, City, boiled..... 70 @ 70½¢

Linseed State and West'n, raw 67 @ 67½¢

Spirits Turpentine—

In Southern bbls..... 48 @ 48½¢

In machine bbls..... 48½ @ 50 ¢

Putty—

In bulk..... \$2.25

In bladders..... 2.25

In cans 12 lb to 25 lb..... 2.25

In cans 1 lb to 5 lb..... 3.25

Petroleum Products—

In Barrels (Barrel Includet)

Stove Gasoline..... gal. 10½ @ 11¢

Kerosene..... gal. 12 @ 13¢

Pipe Drain..... 40%

Pipe Spiral—
See Conductors.

Registers—

List Sept. 2, 1901.

Black Japaned.	70%
White Japaned.	70%
Nickel Plated.	70%
Bronze Finishes in Imitation of Gold.	70%
Silver, Copper or Bronze.	70%
Electroplated in Brass, Bronze or Copper.	70%
White Porcelain.	60%
Solid Brass and Bronze Metal.	50%

Roofing Material—

1 Ply Tarred Paper. ½ ton.	\$31.00 @ 32.00
2 Ply Tarred Paper. ½ roll, 108 sq. ft.	55 @ 60¢
3 Ply Tarred Paper. ½ roll, 108 sq. ft.	80 @ 85¢
Slaters Felt..... ½ ton.	\$35.00 @ 36.00
Roofing Pitch..... ½ bbl.	\$3.50

Rosin—

Common and Good—Strained.	
Rosin, C. & D.	½ bbl. \$1.57½ @ \$1.60
Rosin, E. & F.	½ bbl. 1.65 @ 1.72½
Rosin, G. & H.	½ bbl. 1.75 @ 1.90
Rosin, I. & K.	½ bbl. 2.35 @ 3.00
Rosin, M. & N.	½ bbl. 3.35 @ 3.70

Shoes and Elbows—

See Elbows and Shoes.

Slate Roofing—

f. o. b. oars, Quarry Station.

Pennsylvania:	
Best Bangor, ½ sqr.	\$3.75 @ \$6.00
No. 1 Bangor Ribbon, ½ sq	3.50 @ 3.75
Pen Argyle, ½ sqr.	3.50 @ 4.50
Peach Bottom, ½ sqr.	5.25 @ 6.35
No. 1 Chapman, ½ sqr.	3.75 @ 4.75
No. 1 Penna. Black, ½ sqr	3.15 @ 4.15
Unfading Washington Ban-	
gor, ½ sqr.	3.00 @ 4.50
Vermont:	
No. 1 Sea Green, ½ sqr.	\$2.25 @ \$3.50
Purple, ½ sqr.	4.50 @ 5.00
Unfading Green, ½ sqr.	4.25 @ 5.25
Rel. ½ sqr.	7.00 @ 11.00
Maine:	
Brownville, Unfading Black.	
No. 1, ½ sqr.	\$5.25 @ 7.50

Solder—

½ lb. guaranteed.....	19½ @ 20 ¢
No. 1.....	17 @ 18½¢

Prices of Solder indicated by private brands vary according to composition.

Soldering Fluids—

Per Pound.	
Smaller	Barrels Q'tities
Concentrated Flux.....	4c 5c
Eureka Flux:	
Triple Strength.....	3c 3½c
Extra Concentrated.....	4½c 5c
Crystal.....	7c
Gedney's Fluid.....	2c 2c
Lennox Fluid.....	2c 3c
Perfection Flux.....	3c 3½c @ 1c
Yager's Salts, 1 lb. bottles.....	each, 50¢
1 lb. bottles, per lb., 45¢	

Soldering Coppers—

Per lb.....	22 @ 24 ¢
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Spelter—

Western Spelter.....	5½ @ 6 ¢
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Spiral Pipe—

See Conductors.

Stove Pipe Elbows—

See Elbows, Stove Pipe.

Stove Trucks—

See Trucks, Stove.

Strainers, Conductor—

Galvanized..... 50%

Tin Pigs and Bars—

Banca, pigs, ½ lb.	20½ @ 30¢
Stralts, pigs, ½ lb.	20½ @ 30¢
Stralts, in bars, ½ lb.	30½ @ 31¢

Tin Plates American

Charcoal Plates, Bright—

N. B.—The price of 20 x 28 size is double the price of 14 x 20.

Calland Grade:	
IC, 14 x 20.	27.00
IX, 14 x 20.	8.50
IXX, 14 x 20.	9.75
IXXX, 14 x 20.	11.00
IXXXX, 14 x 20.	12.25

Melyn Grade:

IC, 14 x 20.	6.50
IX, 14 x 20.	8.00
IXX, 14 x 20.	9.25
IXXX, 14 x 20.	10.50
IXXXX, 14 x 20.	11.75

Allaway Grade:

IC, 14 x 20.	6.00
IX, 14 x 20.	7.10
IXX, 14 x 20.	8.20
IXXX, 14 x 20.	9.30
IXXXX, 14 x 20.	10.40

Coke Plates, Bright—

Bessemer Steel, or equal to J. IC, 14 x 20..... \$4.90 @ 5.00

B. Grade, full weight IX, 14 x 20..... \$6.00

N. B.—The reduction per box on lighter plates than IC, 14 x 20, is as follows:

100 lb.	15¢
95 lb.	20¢
90 lb.	25¢
85 lb.	30¢

Terne Plates—

N. B.—The following prices are for IC 20 x 28, the rate for 14 x 20 being half as much. IX is usually held at \$2 per box advance for 8 to 10 lb coating and \$2.50 to \$3 advance for 15 lb and upward.

About 40 lb coating.....	\$16.00 @ 16.50
About 80 lb coating.....	15.25 @ 15.75
About 20 lb coating.....	13.25 @ 13.75
About 15 lb coating.....	11.25 @ 11.75
About 8 lb coating.....	10.00

Boiler Plates, American—

IXX, 14 x 28.. (112 sheets).....	\$12.50
IXX, 14 x 28.. (112 sheets).....	13.50
IXX, 14 x 31.. (112 sheets).....	15.00

Troughs Eave—

See Eave Trough.

Trucks, Stove—

Improved Lock Frame, per doz.....	\$15.00
Steel Lock Frame, per doz.....	18.00
Daisy Improved pattern, ½ doz.....	18.00

Tubes and Tubing—

Brazed Brass, List June 6, 1898..... 40%

Copper and Bronze, 3c per lb. list more than Brass.

Seamless Brass Tubes, net list Feb. 4 1899

Tin..... 50%

Galvanized..... 50%

Fittings for do..... 40%

Zinc—

600 lb casks ½ lb..... 68½¢

Per lb..... 7½ @ 7½¢

PLUMBERS' AND STEAM FITTERS' SUPPLIES.

Boilers, Galvanized—

Standard Boilers:	
30 gal.	72½¢
35 and 40 gal.	70½
Other sizes up to 52 gal.	65¢
52 gal. and above.	55 & 5½
Extra Heavy Boilers:	
18 to 52 gal.	60%
52 gal. and above.	50 & 5½

Brass Work, Plumbers'—

List of December 7, 1896.

Compression:

Basin Cocks..... 60 & 10%

Bath Cocks and Double Bath Cocks..... 60 & 10%

Bibs..... 60 & 10%

Bibs, Flanged..... 60 & 10%

Fuller:

Bibs..... 70%

Basin Cocks, Nos. 1 to 4..... 70%

Bath Cocks, No. 4½..... \$2.40 each net

Ground Key Work:

Finished Bibs..... 55%

Rough Bibs..... 55 & 10%

Rough Stop and Stop and Waste Cocks..... 70 @ 70 & 5%

ALPHABETICAL LIST OF ADVERTISERS.

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American Blower Co. 19	Colwell Lead Co. 30	Gray, G. L. 78	Milwaukee Pattern Works. 22	Sheppard, Isaac A. & Co. 1
American Furnace Co. 17	Cooney & Geiger. 67	Gnmme, McFarland & Co. 71	Miner & Peck Mfg. Co. 27	Shields, W. H. & Co. 25
American Galvanizing Wks. 69	Cope, Geo. W. 26	Gnnster & Forsyth. 29	Monash-Younger Co. 30	Smith, H. B. Co. 11
American Radiator Co. 17	Cortright Metal Roofing Co. 69	Gurney Heater Mfg. Co. 15	Moncrief F'ce & Fdry. Co. 22	Smith & Anthony Co. 80
American Sheet Steel Co. 1&72	Cory, Uzal & Co. 24	Hanson & Van Winkle Co. 28	Montross Metal Shingle Co. 73	Smith & Thayer Co. 14
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American Steel Roofing Co. 69	Crosby Steam Gage & Valve Co. 1	Hart & Cooley Co. 21	Mueller, L. J. F'ce Co. 16	Somerset Stove Fdry. Co. 9
American Tin Plate Co. 72	Curtis & Curtis Co. 30	Hart & Crouse Co. 13	Mullins, W. H. 70	Sommer's, John Son. 1
Anderson Coupling Co. 30	Dangler Stove & Mfg. Co. 8	Hellos-Upton Co. 20	Munsell, E. & Co. 25&65	Special Notices. 65
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Bruce & Cook. 73&80	Floyd, Wells & Co. 15	Kramer Bros. 67	Pierce, Butler & Pierce Mfg. Co. 19	Valentine, M. D. & Bro. Co. 25
Buffalo Forge Co. 19	Foliassbee Bros. Co. 1	Lalance & Grosjean Mfg. Co. 66	Pittsburgh Stove & Range Co. 6	Vedder Pattern Works. 26
Burgess Soldering Furnace Co. 29	Forest City Fdry. & Mfg. Co. 19	Lawless, John H. 29	Presbrey Stove Lining Co. 25	Vogel, William & Bros. 67
Burton, W. J. & Co. 69	Foster, F. W. Mfg. Co. 29	Lawrence-Letts Fibow Co. 26	Rasner & Dinger. 69	Walker & Pratt Mfg. Co. 18
Callahan, Geo. & Co. 69	Frاند, Martin J. & Co. 67	Lennox Manufacturing Co. 23	Richmond Co. 10	Walworth Mfg. Co. 1
Canton Machine & Mfg. Co. 76	Friedley & Voshardt. 74	Littleford Bros. 75	Ringen Stove Co. 5	Washburne, E. G. & Co. 67&76
Canton Steel Roofing Co. 75	Frink, L. P. 80	McClure & Co. 80	Rochester Radiator Co. 20	Weir Stove Co. 80
Castle, Wilmot & Co. 21	Fuller & Warren Co. 1	McLeod & Henry Co. 1	Rutland Fire Clay Co. 26	Weiss, H. & Co. 76
Chattanooga Steel Roofing Co. 70	Galesburg Cornice Works. 70	McSherry, Chas. 77	St. Louis Enameling Co. 66	Whaley-Totten Co. 69
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Clough, R. M. 76		Menrer Bros. Co. 71		Young, Jos. H. 29
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PERFORATED METALS
OF EVERY DESCRIPTION
FOR SCREENS OF ALL KINDS
THE HARRINGTON & KING PERFORATING CO.
217 NORTH UNION STREET.
CHICAGO, ILL., U. S. A.

STEEL, IRON, COPPER, ZINC, BRASS, TIN,
AND ALL OTHER METALS
PERFORATED AS REQUIRED
FOR
GRAIN CLEANING AND MINING MACHINERY,
WOOLEN, COTTON, PAPER AND PULP MILLS,
RICE, FLOUR AND COTTON SEED OIL MILLS,
SUGAR AND MALT HOUSES, DISTILLERIES, FIL-
TER PRESSES, STONE, COAL AND ORE SCREENS,
BRICK AND TILE WORKS, FILTERS,
SPARK ARRESTERS, GAS AND WATER WORKS,
OIL, GAS AND VAPOR STOVES,
COFFEE MACHINERY, &c. &c.
STANDARD SIZES PERFORATED TIN AND BRASS ALWAYS IN STOCK.

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Taylor, N. & G. Co., Phila., Pa.
- Blast Gates.**
American Blower Co., Detroit, Mich.
- Blowers.**
American Blower Co., Detroit, Mich.
Buffalo Forge Co., Buffalo, N. Y.
- Boiler Handles.**
Berger Bros. Co., Phila., Pa.
- Boilers.**
Mueller, L. J. Furnace Co., Milwaukee, Wis.
- Boilers, Range.**
Koven, L. O. & Bro., 50 Cliff St., N. Y.
- Brass Goods.**
Jenkins Bros., 71 John St., N. Y.
- Can Makers' Tools and Machines.**
Bliss, E. W. Co., Brooklyn, N. Y.
Gordon, W. J., Phila., Pa.
Niagara Machine & Tool Wks., Buffalo, N. Y.
Robinson, J. M. Mfg. Co., Cincinnati, Ohio.
Stiles & Parker Press Co., Brooklyn, N. Y.
Toledo Machine & Tool Co., Toledo, O.
- Ceilings, Metallic.**
Berger Mfg. Co., Canton, O.
Canton Steel Roofing Co., Canton, O.
Eller, J. H. & Co., Canton, O.
Friedley & Voshardt, Chicago, Ill.
New York Iron Roofing & Cor. Co., Jersey City, N. J.
- Cellar Drainers.**
Kemp, C. M. Mfg. Co., Baltimore, Md.
- Cement Tamperers.**
Kramer Bros., Dayton, O.
- Coal Vases.**
Cincinnati Stamping Co., Cincinnati, Ohio.
- Coils.**
National Pipe Bending Co., New Haven, Conn.
- Conductor Pipe and Elbows.**
American Steel Roofing Co., Middletown, O.
Berger Bros. Co., Philadelphia, Pa.
Clark, Quilen & Morse, Peoria, Ill.
Lawrence-Letts Elbow Co., Ltd., Waverly, N. Y.
McClure & Co., Pittsburgh, Pa.
- Conductor Pipe Machinery.**
Canton Mch. Mfg. Co., Canton, O.
- Copper, Roofing and Cornice.**
Gumme, McFarland & Co., Phila., Pa.
- Cornice Machinery.**
Double Truss Cornice Brake Co., Buffalo, N. Y.
Dreis, Andrews & Krump, Chicago, Ill.
Keene, Geo. C. & Co., Cincinnati, O.
Niagara Machine & Tool Works, Buffalo, N. Y.
Ohl, Geo. A. & Co., Newark, N. J.
Peck, Stow & Wilcox Co., 27 Murray St., New York.
Phila. Machine Tool Co., Phila., Pa.
Robinson, J. M. Mfg. Co., Cincinnati, Ohio.
- Cornice Work, Galvanized Iron.**
Mullins, W. H., Salem, O.
- Cut Offs, Rain Water.**
Convey & Geiger, Indianapolis, Ind.
Perkins, J. L. & Co., Chicago, Ill.
- Dampers.**
Howes, S. M. Co., Boston, Mass.
Shields, W. H. & Co., Troy, N. Y.
Stover Mfg. Co., Freeport, Ill.
Troy Nickel Works, Troy, N. Y.
- Die Stocks.**
Curtis & Curtis Co., Bridgeport, Ct.
- Draft Registers.**
Matthews, H. A. Mfg. Co., Seymour, Ct.
- Drop Hammers.**
Bliss, E. W. Co., Brooklyn, N. Y.
Toledo Mach. & Tool Co., Toledo, O.
- Dryers.**
Sommer's, John Son, Newark, N. J.
- Dumb Waiters.**
Energy Elevator Co., Phila., Pa.
- Eave Troughs.**
Berger Bros. Co., Philadelphia, Pa.
Berger Mfg. Co., Canton, O.
Clark, Quilen & Morse, Peoria, Ill.
Eller, J. H. & Co., Canton, O.
- Eave Trough Hangers.**
Berger Bros. Co., Phila., Pa.
Berger Mfg. Co., Canton, O.
- Eave Trough Machinery.**
Canton Mch. Mfg. Co., Canton, O.
- Edgers, Roofing.**
Danzon Metal Works, Hagerstown, Md.
- Elbows, Stove Pipe.**
Lawrence-Letts Elbow Co., Ltd., Waverly, N. Y.
Shepard, Sidney & Co., Buffalo, N. Y.
- Electric Dynamo Machines.**
Hanson & Van Winkle Co., Newark, N. J.
Zucker & Levett & Loeb Co., 526 W. Twenty-fifth St., New York.
- Enameled Ware.**
Lalace & Grosjean Mfg. Co., 19 Cliff St., N. Y.
National Enameling & Stamping Co., 78 Beekman St., N. Y.
- Enameling.**
St. Louis Enameling Co., St. Louis, Mo.
- Exhausters.**
American Blower Co., Detroit, Mich.
Buffalo Forge Co., Buffalo, N. Y.
- Fanciers.**
Clark Novelty Co., Rochester, N. Y.
- Fire Brick.**
Presbrey Stove Lining Co., Taunton, Mass.
Rutland Fire Clay Co., Rutland, Vt.
Valentine, M. D. & Bro. Co., Woodbridge, N. J.
Williams Stove Lining Co., Taunton, Mass.
- Fire Pats.**
Burgess Soldering Furnace Co., Columbus, Ohio.
Clayton & Lambert Mfg. Co., Detroit, Mich.
- Fire Sets.**
Shields, W. H. & Co., Troy, N. Y.
Troy Nickel Works, Troy, N. Y.
- Furnace Cement.**
Colbrook, W. H. Sons & Co., Syracuse, N. Y.
Perkins, J. L. & Co., Chicago, Ill.
Rutland Fire Clay Co., Rutland, Vt.
- Furnace Pipe and Fittings.**
Excelsior Steel Furnace Co., Chicago, Ill.
International Heater Co., Utica, N. Y.
Meyer, F. & Bro. Co., Peoria, Ill.
Osborn, J. M. & L. A., Cleveland, O.
- Furnaces and Heaters.**
Amer. Furnace Co., St. Louis, Mo.
Barstow Stove Co., Providence, R. I.
Beekwith, P. D., Est. of, Dowagiac, Mich.
Bergstrom Bros. & Co., Neenah, Wis.
Bonnot Co., Canton, O.
Boynton Furnace Co., 207 Water St., N. Y.
Brand Stove Co., Milwaukee, Wis.
Blen Heater Co., Hoosick Falls, N. Y.
Cory, Uzal & Co., 210 Water St., N. Y.
Dighton Furnace Co., Taunton, Mass.
Floyd, Wells & Co., Roversford, Pa.
Forest City Fdry. & Mfg. Co., Cleveland, O.
Giblin & Co., Utica, N. Y.
Graft Furnace Co., 208 Water Street, New York.
Hart & Crouse Co., Utica, N. Y.
Howes, S. M. Co., Boston, Mass.
International Heater Co., Utica, N. Y.
Kelsey Heating Co., Syracuse, N. Y.
Lennox Manufacturing Co., Marshalltown, Iowa.
Mazee Furnace Co., Boston, Mass.
March Brownback Stove Co., Pottstown, Pa.
Meyer, F. & Bro. Co., Peoria, Ill.
Moncrief Furnace & Fdry Co., Atlanta, Ga.
Mueller, L. J. Furnace Co., Milwaukee, Wis.
Patric Furnace Co., Springfield, O.
Peck Williamson Co., Cincinnati, O.
Richmond Company, Norwich, Conn.
Schwab, R. J. & Sons Co., Milwaukee, Wis.
Sheppard, Isaac A. & Co., Phila., Pa.
Stamford Foundry Co., Stamford, Ct.
Tubular Heating and Ventilating Co., Phila., Pa.
Walker & Pratt Mfg. Co., Boston, Mass.
Wood & Bishop Co., Bangor, Me.
- Gas Heaters. (See Stoves and Ranges, Gas.)**
- Gas Machines.**
Kemp, C. M. Mfg. Co., Baltimore, Md.
- Granite Steel Ware.**
National Enameling & Stamping Co., 78 Beekman St., N. Y.
- Groovers.**
Wueeler, W. A., Indianapolis, Ind.
- Gutter Formers.**
Double Truss Cornice Brake Co., Buffalo, N. Y.
- Heaters, Steam and Hot Water.**
American Radiator Co., Chicago, Ill.
Barstow Stove Co., Providence, R. I.
Boynton Furnace Co., 207 Water St., N. Y.
Dighton Furnace Co., Taunton, Mass.
Drake, W. H., Newark, N. J.
Gorton & Lidgerwood Co., 98 Liberty St., New York.
- Gurney Heater Mfg. Co., Boston, Mass.**
- Hart & Crouse Co., Utica, N. Y.**
- International Heater Co., Utica, N. Y.**
- Kewanee Boiler Co., Kewanee, Ill.**
- Mazee Furnace Co., Boston, Mass.**
- Mueller, L. J. Furnace Co., Milwaukee, Wis.**
- National Pipe Bending Co., New Haven, Conn.**
- Pierce, Butler & Pierce Mfg. Co., Syracuse, N. Y.**
- Richmond Company, Norwich, Conn.**
- Sheppard, Isaac A. & Co., Phila., Pa.**
- Smith, H. B. Co., Westfield, Mass.**
- Smith & Anthony Co., Boston, Mass.**
- Smith & Thayer Co., Boston, Mass.**
- Stolz, Frank D., Chicago, Ill.**
- Walker & Pratt Mfg. Co., Boston, Mass.**
- Hollow Ware.**
Lalace & Grosjean Mfg. Co., 19 Cliff St., New York.
National Enameling & Stamping Co., 78 Beekman St., N. Y.
Sperry, D. R. & Co., Batavia, Ill.
- Hotel Cooking Apparatus.**
Smith & Anthony Co., Boston, Mass.
- Household Specialties.**
Shepard, Sidney & Co., Buffalo, N. Y.
- Iron, Galvanized Sheet. (See Sheets, Galvanized.)**
- Iron and Steel Sheet. (See Sheets, Iron and Steel.)**
- Iron, Planished Sheet.**
Amer. Sheet Steel Co., New York.
- Lath, Metallic.**
Schrattwieser Metal Lath Works, Brooklyn, N. Y.
- Lead Pipe.**
Colwell Lead Co., 63 Centre St., N. Y.
- Lead Washers.**
Littleford Bros., Cincinnati, O.
- Lightning Rods.**
Washburns, E. G. & Co., 46 Cortlandt St., N. Y.
- Metal Ceilings. (See Ceilings, Metallic.)**
- Metal Window Frames.**
Smith-Warren Co., Boston, Mass.
- Mica.**
Munsell, Eugene & Co., 218 Water St., New York.
Ohio Mica Co., Canton, Ohio.
Rutland Fire Clay Co., Rutland, Vt.
- Milk Cans.**
National Enameling & Stamping Co., 78 Beekman St., N. Y.
- Modeling.**
Art Modeling Works, Camden, N. J.
- Nickel Plating Outfits.**
Hanson & Van Winkle Co., Newark, N. J.
Zucker & Levett & Loeb Co., 526-530 W. Twenty-fifth St., New York.
- Oil Heaters. (See Stoves and Ranges, Oil, Vapor and Gasoline.)**
- Oven Indicators.**
Helios Upton Co., Peabody, Mass.
- Oven Thermometers.**
Evans Stamping & Plating Co., Taunton, Mass.
- Ovens, Portable.**
Blodgett, G. S. Co., Burlington, Vt.
Howes, S. M. Co., Boston, Mass.
- Patent Solicitors.**
Howson & Howson, Philadelphia, Pa.
Stocking, E. B., Washington, D. C.
- Patterns.**
Cope, Geo. W., Detroit, Mich.
Gobelle Pattern Co., Cleveland, Ohio.
Gray, G. L., Galesburg, Ill.
Vedder Pattern Wks., Troy, N. Y.
- Perforated Sheet Metal.**
Harrington & King Perforating Co., Chicago, Ill.
- Plg Iron.**
Wister, L. & R. & Co., Philadelphia, Pa.
- Pipe Cutting and Threading Machines.**
Curtis & Curtis Co., Bridgeport, Ct.
Saunders, D. Sons, Yonkers, N. Y.
- Pipe Joint Cement.**
Callahan, Geo. & Co., 213 Front Street, N. Y.
- Pipe Vises.**
Walworth Mfg. Co., Boston, Mass.
- Pipe, Water and Gas.**
Miller, C. & Son Co., Utica, N. Y.
- Plumbers' Tools, Specialties and Supplies.**
Adee, Fred & Co., 90 Beekman St., N. Y.
Anderson Coupling Co., Portland, Ct.
Barstow Stove Co., Providence, R. I.
Clayton & Lambert Mfg. Co., Detroit, Mich.
Colwell Lead Co., 63 Centre St., N. Y.
Foster, F. W. Mfg. Co., Boston, Mass.
National Pipe Bending Co., New Haven, Conn.
Pierce, Butler & Pierce Mfg. Co., Syracuse, N. Y.
Walworth Mfg. Co., Boston, Mass.
Young, Jos. H., Boston, Mass.
- Plyers, Pipe Expanding.**
Anderson Coupling Co., Portland, Ct.
- Pokers and Lifters.**
Shields, W. H. & Co., Troy, N. Y.
Stover Mfg. Co., Freeport, Ill.
Troy Nickel Works, Troy, N. Y.
- Potato Masher.**
Vogel, Wm. & Bros., Brooklyn, N. Y.
- Presses and Dies.**
Bliss, E. W. Co., Brooklyn, N. Y.
Gordon, W. J., Phila., Pa.
Miner & Peck Mfg. Co., New Haven, Conn.
Niagara Machine & Tool Wks., Buffalo, N. Y.
Phila. Machine Tool Co., Phila., Pa.
Robinson, J. M. Mfg. Co., Cincinnati, Ohio.
Stiles & Parker Press Co., Brooklyn, N. Y.
Swaine, F. J. Co., St. Louis, Mo.
- Pumps.**
Lawless, John H., Jersey City, N. J.
Noppel Pump Co., Hartford, Conn.
- Punching Machines.**
Bertsch & Co., Cambridge City, Ind.
Bliss, E. W. Co., Brooklyn, N. Y.
Buffalo Forge Co., Buffalo, N. Y.
Clough, R. M., Tolland, Conn.
Robinson, J. M. Mfg. Co., Cincinnati, Ohio.
Toledo Mach. & Tool Co., Toledo, O.
- Radiators, Hot Air.**
Burton, W. J. & Co., Detroit, Mich.
Castle, Wilmot & Co., Rochester, N. Y.
Independent Register Co., Cleveland, Ohio.
Rochester Radiator Co., Rochester, N. Y.
- Radiators, Steam and Hot Water.**
American Radiator Co., Chicago, Ill.
Gurney Heater Mfg. Co., Boston, Mass.
Pierce, Butler & Pierce Mfg. Co., Syracuse, N. Y.
- Range Boilers.**
Koven, L. O. & Bro., 50 Cliff St., N. Y.
- Reflectors.**
Frank, I. P., 551 Pearl St., New York.
- Registers.**
Canton Steel Roofing Co., Canton, O.
Dighton Furnace Co., Taunton, Mass.
Hart & Cooley Co., New Britain, Conn.
Independent Register Co., Cleveland, Ohio.
- Registers, Draft.**
Matthews, H. A. Mfg. Co., Seymour, Ct.
- Registers, Hot Air.**
U. S. Register Co., Ltd., Battle Creek, Mich.
- Roofing, Asphalt.**
Asphalt Ready Roofing Co., 136 Water St., N. Y.
- Roofing Cement and Paint.**
Asphalt Ready Roofing Co., 136 Water St., N. Y.
Callahan, Geo. & Co., 215 Front Street, N. Y.
Chatanooga Steel Roofing Co., Chattanooga, Tenn.
Dixon, Jos. Crucible Co., Jersey City, N. J.
Perkins, J. L. & Co., Chicago, Ill.
Rutland Fire Clay Co., Rutland, Vt.
- Roofing Cork.**
Stowell Mfg. Co., Jersey City, N. J.
- Roofing Edgers.**
Danzon Metal Works, Hagerstown, Md.
- Roofing and Siding, Iron and Steel, Corrugated and Plain.**
Berger Mfg. Co., Canton, O.
Burton, W. J. & Co., Detroit, Mich.
Canton Steel Roofing Co., Canton, O.
Chatanooga Steel Roofing Co., Chattanooga, Tenn.
Eller, J. H. & Co., Canton, O.
Globe Iron Roofing & Corrugating Co., Cincinnati, O.
Gumme, McFarland & Co., Phila., Pa.
New York Iron Roofing & Cor. Co., Jersey City, N. J.
- Roofing Nails.**
Salem Nail Co., 279 Pearl St., N. Y.
- Roofing Slate.**
Auld & Conger Co., Cleveland, O.
Bray, J. & Co., E. Bangor, Pa.
Galt, John & Sons, 253 Broadway, N. Y.
Giblin & Co., Buffalo, N. Y.
Hanson, E. J. & Co., 38 Park Row, N. Y.
O'Halloran & Jacobs, Pittsburgh, Pa.
- Sap Spouts.**
Miller, C. & Son Co., Utica, N. Y.
- Schools and Colleges.**
International Correspondence Schools, Scranton, Pa.
- Screens.**
Harrington & King Perforating Co., Chicago, Ill.
- Screws.**
Hubbell, Harvey, Bridgeport, Ct.
- Sewer Pipe.**
Rutland Fire Clay Co., Rutland, Vt.
- Shaped Iron and Steel, Galvanized.**
Am. Galvanizing Wks., Chicago, Ill.
- Shears, Sheet Metal.**
Buffalo Forge Co., Buffalo, N. Y.
McSherry, Chas., Pittsburgh, Pa.
Peck, Stow & Wilcox Co., 27 Murray St., N. Y.
- Sheet Metal Machinery.**
Bertsch & Co., Cambridge City, Ind.
Bliss, E. W. Co., Brooklyn, N. Y.
Clough, R. M., Tolland, Conn.
Double Truss Cornice Brake Co., Buffalo, N. Y.
Excelsior Tool & Mch. Works, St. Louis, Mo.
Gordon, W. J., Phila., Pa.
Keene, Geo. C. & Co., Cincinnati, O.

- Miner & Peck Mfg. Co.,** New Haven, Conn.
Niagara Machine & Tool Wks., Buffalo, N. Y.
Ohi. Geo. A. & Co., Newark, N. J.
Peck, Stow & Wilcox Co., 27 Murray St., New York.
Phila. Machine Tool Co., Phila., Pa.
Robinson, J. M. Mfg. Co., Cincinnati, Ohio.
Stiles & Parker Press Co., Brooklyn, N. Y.
Swaine, F. J. Co., St. Louis, Mo.
- Sheets, Aluminum Coated Steel.**
Steel & Iron Aluminum Coating Co., Conneville, Pa.
- Sheets, Galvanized.**
American Sheet Steel Co., New York.
Bruce & Cook, 186 to 190 Water St., N. Y.
McClure & Co., Pittsburgh, Pa.
Osborn, J. M. & L. A., Cleveland, O.
Wood Alan Co., Philadelphia, Pa.
- Sheets, Iron and Steel.**
American Sheet Steel Co., New York.
Bruce & Cook, 186 to 190 Water St., N. Y.
Coe, Jas. A. & Co., Newark, N. J.
Follansbee Bros. Co., Pittsburgh, Pa.
Gummey, McFarland & Co., Phila., Pa.
Osborn, J. M. & L. A., Cleveland, O.
Wood Co., Alan, Philadelphia, Pa.
- Shingles and Tiles, Metallic.**
Chattanooga Steel Roofing Co., Chattanooga, Tenn.
Cincinnati Stamping Co., Cincinnati, O.
Courtright Metal Roofing Co., Philadelphia, Pa.
Merchant & Co., Philadelphia, Pa.
Meurer Bros. Co., Brooklyn, N. Y.
Montross Metal Shingle Co., Camden, N. J.
Penn Metal Ceiling & Rfg. Co., Phila., Pa.
- Shot.**
Colwell Lead Co., 63 Centre St., N. Y.
- Siding. (See Roofing and Siding.)**
- Sinks.**
Lalanc & Grosjean Mfg. Co., 19 Cliff St., New York.
- Skylights.**
Canton Steel Roofing Co., Canton, O.
Chattanooga Steel Roofing Co., Chattanooga, Tenn.
Drouve, G. Co., Bridgeport, Conn.
Galesburg Cornice Works, Galena, Ill.
Mullins, W. H., Salem, O.
Rasner & Dinger, Pittsburgh, Pa.
- Slaters' Tools.**
Galt, Jno. & Sons, 253 Broadway, N. Y.
Salem Nail Co., 279 Pearl St., N. Y.
- Smoke Test Machine.**
Gunster & Forsyth, Scranton, Pa.
- Snow Guards.**
Clason Arch. Metal Works, Providence, R. I.
- Solder.**
Bruce & Cook, 186 to 190 Water St., N. Y.
Follansbee Bros. Co., Pittsburgh, Pa.
Gummey, McFarland & Co., Phila., Pa.
McClure & Co., Pittsburgh, Pa.
Meurer Bros. Co., Brooklyn, N. Y.
Taylor, N. & G. Co., Philadelphia, Pa.
- Soldering Furnaces.**
Burgess Soldering Furnace Co., Columbus, Ohio.
- Speaking Tubes and Whistles.**
Ostrander, W. R. & Co., 22 Dey Street, N. Y.
- Specialties, Sheet Metal.**
Vogel, Wm. & Bros., Brooklyn, N. Y.
- Statuary, Sheet Copper and Bronze.**
Mullins, W. H., Salem, O.
- Steam and Gas Fitters' Supplies.**
Curtis & Curtis Co., Bridgeport, Conn.
Walworth Mfg. Co., Boston, Mass.
- Steam and Water Engineering and Regulating Specialties.**
Kleley & Mueller, 7-11 West 13th St., N. Y.
- Steel Stamps and Stencil Dies.**
Schwerdtle Stamp Co., Bridgeport, Ct.
- Stove Cement.**
Dixon, Jos. Crucible Co., Jersey City, N. J.
Rutland Fire Clay Co., Rutland, Vt.
- Stove Linings.**
Bridgeport Crucible Co., Bridgeport, Conn.
Hessler, H. E. Co., Syracuse, N. Y.
McLeod & Henry Co., Troy, N. Y.
Marcy Stove Repair Co., 74 Beekman St., N. Y.
Presbrey Stove Lining Co., Taunton, Mass.
Rutland Fire Clay Co., Rutland, Vt.
Valentine, M. D. & Bro. Co., Woodbridge, N. J.
Williams Stove Lining Co., Taunton, Mass.
- Stove and Metal Polish.**
Hoffman, Geo. W., Indianapolis, Ind.
Rutland Fire Clay Co., Rutland, Vt.
- Stove Patterns.**
Cope, G. W., Detroit, Mich.
Gobelle Pattern Co., Cleveland, O.
Milwaukee Pattern Works, Milwaukee, Wis.
Vedder Pattern Works, Troy, N. Y.
- Stove Pipe.**
Triumph Adjustable Stove Pipe Mfg. Co., Peoria, Ill.
- Stove Pipe Thimbles.**
City Forge & Iron Works, Dayton, O.
- Stove Repairs.**
Clark, Henry N. Co., Boston, Mass.
Howes, S. M. Co., Boston, Mass.
Marcy Stove Repair Co., 74 Beekman St., N. Y.
Metropolis Sheet Metals & Stove Repairing Co., Newark, N. J.
Troy Nickel Works, Troy, N. Y.
- Stove Trimmings, &c.**
Fanner Mfg. Co., Cleveland, O.
Shields, W. H. & Co., Troy, N. Y.
Troy Nickel Works, Troy, N. Y.
- Stove Trucks.**
Howes, S. M. Co., Boston, Mass.
Tucker & Dorsey Mfg. Co., Indianapolis, Ind.
- Stoves and Ranges.**
Barstow Stove Co., Providence, R. I.
Beckwith, P. D., Est. of, Dowagiac, Mich.
- Bergstrom Bros. & Co.,** Neenah, Wis.
Boynton Furnace Co., 207 Water Street, New York.
Brand Stove Co., Milwaukee, Wis.
Cosoy, C. H., Richmond, Va.
Dighton Furnace Co., Taunton, Mass.
Floyd, Wells & Co., Roversford, Pa.
Fuller & Warren Co., Troy, N. Y.
Giblin & Co., Utica, N. Y.
Graff Furnace Co., 203 Water Street, New York.
Joliet Stove Works, Joliet, Ill.
Magee Furnace Co., Boston, Mass.
March-Brownback Stove Co., Pottstown, Pa.
Miller, Wm. Range & Furnace Co., Cincinnati, O.
Ohio Stove Co., Portsmouth, O.
Pittsburgh Stove & Range Co., Pittsburgh, Pa.
Richmond Company, Norwich, Conn.
Ringen Stove Co., St. Louis, Mo.
Schneider & Trenkamp Co., Cleveland, O.
Shennard, Isaac A. & Co., Phila., Pa.
Smith & Anthony Co., Boston, Mass.
Somerset Stove Foundry Co., Somerset, Mass.
Stamford Foundry Co., Stamford, Ct.
Walker & Pratt Mfg. Co., Boston, Mass.
Weir Stove Co., Taunton, Mass.
White, Warner Co., Taunton, Mass.
Willard, Wm. G., St. Louis, Mo.
- Stoves and Ranges, Gas.**
Dangler Stove & Mfg. Co., Cleveland, Ohio.
Dighton Furnace Co., Taunton, Mass.
Howes, S. M. Co., Boston, Mass.
Metropolis Sheet Metals & Stove Repairing Co., Newark, N. J.
Ringen Stove Co., St. Louis, Mo.
Standard Lighting Co., Cleveland, O.
- Stoves and Ranges, Oil, Vapor and Gasoline.**
Dangler Stove & Mfg. Co., Cleveland, Ohio.
Ringen Stove Co., St. Louis, Mo.
Schneider & Trenkamp Co., Cleveland, O.
Standard Lighting Co., Cleveland, O.
- Tank Heaters.**
American Radiator Co., Chicago, Ill.
- Tanks, Steel and Wood.**
Edwards, J. H., 59 Park Place, N. Y.
- Terne Plates.**
American Tin Plate Co., New York.
Taylor, N. & G. Co., Phila., Pa.
- Tinners' Tools, Machines and Supplies.**
Berger Bros. Co., Phila., Pa.
Bertsch & Co., Cambridge City, Ind.
Bliss, E. W. Co., Brooklyn, N. Y.
Bruce & Cook, 186 to 190 Water St., New York.
Follansbee Bros. Co., Pittsburgh, Pa.
Keene, Geo. C. & Co., Cincinnati, O.
Meurer Bros. Co., Brooklyn, N. Y.
Niagara Machine & Tool Wks., Buffalo, N. Y.
Ohi. Geo. A. & Co., Newark, N. J.
Peck, Stow & Wilcox Co., 27 Murray St., New York.
Stiles & Parker Press Co., Brooklyn, N. Y.
Weiss, H. & Co., 20 Cliff St., N. Y.
- Tinners' Trimmings.**
Vogel, Wm. & Bros., Brooklyn, N. Y.
- Tin Plate.**
American Tin Plate Co., New York.
Bruce & Cook, 186 to 190 Water St., New York.
Coe, Jas. A. & Co., Newark, N. J.
Follansbee Bros. Co., Pittsburgh, Pa.
Gummey, McFarland & Co., Phila., Pa.
McClure & Co., Pittsburgh, Pa.
Merchant & Co., Philadelphia, Pa.
Meurer Bros. Co., Brooklyn, N. Y.
Osborn, J. M. & L. A., Cleveland, Ohio.
Taylor, N. & G. Co., Philadelphia, Pa.
- Tinware.**
Shepard, Sidney & Co., Buffalo, N. Y.
- Tools and Machines, Steam and Gas Fitters'.**
Curtis & Curtis Co., Bridgeport, Conn.
Saunders, D. Sons, Yonkers, N. Y.
- Torches, Plumbers.**
Clayton & Lambert Mfg. Co., Detroit, Mich.
- Valves.**
Am. Steam Gage & Valve Mfg. Co., Boston, Mass.
Crosby Steam Gage & Valve Co., Boston, Mass.
Jenkins Bros., 71 John St., New York.
Monash-Younger Co., Chicago, Ill.
Morgan & Co., Chicago, Ill.
- Ventilating Apparatus.**
American Blower Co., Detroit, Mich.
Buffalo Forge Co., Buffalo, N. Y.
- Ventilators and Chimney Caps.**
Berger Bros. Co., Phila., Pa.
Buffalo Forge Co., Buffalo, N. Y.
Fenn, Geo. E., Boston, Mass.
Globe Ventilator Co., Troy, N. Y.
Kramer Bros., Dayton, O.
Merchant & Co., Philadelphia, Pa.
Meurer Bros. Co., Brooklyn, N. Y.
Washburne, E. G. & Co., 46 Cortlandt St., New York.
- Washers, Valves, &c.**
Littleford Bros., Cincinnati, O.
Marston, I. G. & Co., Boston, Mass.
- Water Coolers.**
National Enameling & Stamping Co., 78 Beekman St., N. Y.
- Water Closets.**
Adee, Fred. & Co., 90 Beekman St., N. Y.
Colwell Lead Co., 63 Centre St., N. Y.
- Water Fronts.**
Clark, Henry N. Co., Boston, Mass.
- Water Heaters.**
Adam, W. J., Joliet, Ill.
Kemp, C. M. Mfg. Co., Baltimore, Md.
- Wind Gates.**
Miner & Peck Mfg. Co., New Haven, Ct.
- Window Frames, Metal.**
Smith-Warren Co., Boston, Mass.

SEE ALPHABETICAL INDEX, PAGE 61.

THE METAL WORKER.

With which is Incorporated The Stove and Tin Trade Journal, The Sheet Metal Builder, and Metal.

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HELP WANTED.

A first-class TINSMITH with experience in cornice and furnace work; state experience; steady work the year around. Bruno Martin & Son, Saginaw, Mich. July 12

A steady, reliable TIN and SHEET IRON WORKER; quick and good workman for a general jobbing shop; to such a man steady work and fair pay; a good single man preferred; no rover. "Tin," care *The Metal Worker*, New York. July 12

Two good TIN and SHEET IRON WORKERS at once; steady employment. Albright & Strate, West Lafayette, Ind. July 12

PLUMBERS, strictly sober and reliable men; reference required; steady work guaranteed. F. J. Zimmerly & Co., Fort Wayne, Ind. July 12

First-class SALESMAN; one who thoroughly understands sheet metal business and well posted in tinware and house furnishing line, with an acquaintance and established trade throughout the lower Michigan peninsula. Box 71, care *The Metal Worker*, 1205 Fisher Building, Chicago, Ill. July 12

SALESMAN and PORTER; must be familiar with stoves, ranges and heaters; references; good opening to the right parties. John M. Wolf Company, 742 Flushing avenue, Brooklyn, N. Y. July 12

CORNICE MAKER FOREMAN who understands cutting and taking full charge of shop. "Cutting," care *The Metal Worker*, New York. July 12

At once, good all around TINNER; one who has some knowledge of plumbing and hot water heating and can clerk in store when necessary; steady employment the year around. Address, giving reference, M. R. O'Neill, 57 Broadway, Fargo, N. D. July 12

A first-class PLUMBER; one who thoroughly understands steam and hot water heating; must be sober and reliable; none other need apply. Charles E. Bunce, Riverhead, N. Y. July 12

An all around TINNER; steady job year round; state wages. J. Nagel, Marshall, Mich. July 12

An A1 retail HARDWARE SALESMAN; liberal salary to the right man. Hamilton & Hamilton, Oskaloosa, Iowa. July 12

Steady job, winter and summer; no lost time; good wages; a good job for a good man. "Zinc," care *The Metal Worker*, New York. July 12

A manufacturer of valves, located in the Central West, desires a competent FOREMAN to take charge of brass foundry; references required. Box 69, care *The Metal Worker*, 1205 Fisher Building, Chicago, Ill. July 12

Two TINSMITHS; good ROOFERS and FURNACE HANDS; able to do all kinds of shop jobbing work; a steady job for steady active men. "Tinsmith," West New Brighton P. O., N. Y. July 12

FOREMAN for gas range department wanted; sheet metal worker with executive ability to handle men; one who is familiar with dies, presses and other tools pertaining to the gas stove business; a man capable to take charge of the shop; some one acquainted with the gas stove business preferred; state age and salary asked; references required. "Gas Range Foreman," care *The Metal Worker*, New York. July 12

FOREMAN for superintendence of stove mounting shop; must have testimonial as to character and ability. Apply with references to the Gurney Foundry Co., Limited, Toronto, Ontario. July 12

Good all around TINSMITH; must be a hustler, sober and industrious; will give steady employment and good wages to the right man. J. M. Fanning, Oswego, N. Y. July 12

A reliable and sober FOREMAN for stove foundry; one thoroughly familiar with cupola practice and good manager; give reference from last employer, state salary expected and what experience have had. Southern Stove Works, Richmond, Va. July 12

At once, three or four first-class TINNERS or CORNICE MAKERS. Decatur Cornice & Roofing Works, Decatur, Ill. July 12

Good all around TINNER wanted, between 25 and 40; state reference and experience; wages 30 cents per hour; regular work. Schroeder Bros., 902 Payne avenue, St. Paul, Minn. July 5

At once, one TINSMITH and one PLUMBER, or both in one; steady job in up to date town in Western Michigan; we know the value of a good man; state experience and wages wanted. Sweet Bros., Dowagiac, Mich. July 5

First-class SHEET IRON WORKERS on blow pipe work; erecting mechanics preferred; state experience and wages expected. Dixie Mfg. Company, Greensboro, N.C. July 5

PLUMBER that understands tin work or has some knowledge of same; excellent chance for young man who has not yet finished his trade; work in the country and wages moderate. "Sanitary," care *The Metal Worker*, New York. July 5

A first-class CORNICE and SKYLIGHT WORKER; one who can cut out, put together and erect his own work if necessary; steady work and good wages year round; nine hours. Thomas & Smith, Norfolk, Va. July 5

Near Boston, a young first-class TINSMITH, FURNACE MAN and JOBBER; steady work and reasonable wages; can learn plumbing spare time. "A. J.," care *The Metal Worker*, New York. July 5

Two practical TINSMITHS who understand roofing, general jobbing and blower pipe work; \$2.75 per day; 8 hours. Meyer & Co., Mahoningtown, Pa. July 5

Two practical SLATE ROOFERS; men who are familiar with tin work in connection with slate roofing preferred. Meyer & Co., Mahoningtown, Pa. July 5

At once, TINSMITH who understands plumbing; steady work, good wages to satisfactory man; state wages. Freeman Bros., Ithaca, N. Y. July 5

First-class CORNICE CUTTER and BUMPER; must be sober and industrious; none but the best need apply. Hughes, 1128 North Broadway, Seattle, Wash. July 5

First-class SALESMAN; one who thoroughly understands the sheet metal business and has had experience as a salesman in Boston and vicinity; no other need apply; salary; best references required. Wheeling Corrugating Company, 132-134 Pearl street, Boston, Mass. July 5

A first-class PLUMBER, STEAM and HOT WATER FITTER; must be able to work from plans; steady employment and good wages to the right man. Write, giving references, experience and wages wanted, The Henderson & Heasley Company, Warren, Ohio. July 5

SALESMAN to handle fine line of stoves on commission in New England, also New York City and vicinity; either as a side line or whole; liberal arrangement with A1 man. "Chance," care *The Metal Worker*, New York. July 5

PLUMBERS; work all summer; no strike in town; good jobs for steady young men; state experience and wages expected; good boarding to be had at \$4.50 per week. Write at once, Geo. Whitehill, Butler, Pa. July 5

A steady, reliable TIN and SHEET METAL WORKER; must be a neat workman and know his business; state wages. G. W. Huff, Sanford, Maine. July 5

Thoroughly reliable TINNER who understands plumbing and would be capable of taking charge of country shop; owner is a mechanic but his time is taken up in the store; steady position to right man; give full particulars as to age, experience, habits, and state if married or single. Hoover Bros., Milroy, Pa. July 5

IRON WORKERS in a shop doing heavy sheet iron and structural work. "R. A. D.," care *The Metal Worker*, New York. June 28

SITUATIONS WANTED.

PLUMBER wants work, city or country. Thos. Buckley, care Jno. Connolly, 2533 Third avenue, New York. July 12

As PLUMBER in Montana or Pacific Coast States; first-class workman; sober; union man. Box 70, care *The Metal Worker*, 1205 Fisher Building, Chicago, Ill. July 12

By SLATE and TILE ROOFER; 16 years' experience; single man. "Slater," 602 East Mill street, Akron, Ohio. July 12

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By a sober and reliable young man as TINSMITH; ten years' experience at in and outside work, steam fitting and pump work; wages, \$11 per week for steady position year around; references. "Tinsmith," Brattleboro, Vt. July 12

As MANAGER of small general store; ten years' experience; have charge of hardware stock at present; best of reference. Box 105, Rock Island, Texas. July 12

By a practical TINSMITH and PLUMBER, licensed, having over 18 years' experience; have been foreman; can estimate and solicit; used to country and city work; wages easily arranged for steady job; single; 39 years old; experienced roofing, furnaces, &c. "Competent," care *The Metal Worker*, New York. July 12

By PLUMBER with 20 years' experience; first-class man. "F. S.," care *The Metal Worker*, New York. July 12

By PLUMBER and GAS FITTER; steady and sober; 15 years' experience in New York City; wants steady job in city or country; wages moderate. George Holland, 1635 Lexington avenue, New York. July 12

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By young Scotsman, lately come to this country; comes well recommended from former employer and others; holds certificate of merit from British Board of Examiners; well up in City and Country work. "B. W.," care of John Campbell, 26 Lake street, Paterson, N. J. July 12

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PLUMBER; first-class jobber; 20 years' experience; in a first-class shop; thoroughly understands his business; neat and obliging. "B. B.," 1624 First avenue, New York. July 5

By a TINSMITH and SHEET IRON WORKER; temperate and reliable; proficient in all kinds of work; inside work preferred; moderate wages; A1 references. Frank M. Le Seur, 77 Barrow street, New York. July 5

By a first-class PLUMBER, steady position in a country town. "A. S.," 1237 Third avenue, New York. July 5

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By PLUMBER in country. George Conlin, 499 West 124th street, New York. July 5

By first-class PLUMBER in country. "F. R.," care B. Kimmerle, 155 First avenue, New York. July 5

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A Practical Treatise on Coating with Tin and Zinc, with a Special Chapter on Tinning Gray Iron Castings. By W. T. Flanders. Size 5½ x 8 inches. 93 pages, 40 illustrations. Cloth bound. Price \$2.00.

The author of this work has made a specialty of galvanizing and tinning, and has been employed to erect plants in various parts of the country, also to instruct the owners, so that, in all instances, they have been able to operate them successfully. The subject of galvanizing is, therefore, treated from the standpoint of an expert and in a practical manner. The selection of materials and apparatus for erecting plants of large and small capacity is treated, together with instructions for their equipment and accompanied by many illustrations of the plants and of the tools and appliances. Plain directions are given for the preparatory treatment of metals and articles to be coated, and every detail which is of importance in successfully applying to metals a secure and attractive coating is described. The tinning of articles is treated in the same practical manner. The difficulties found by many who have attempted to tin malleable and gray iron castings are explained and methods for doing the work made simple.

CONTENTS.**Galvanizing.**

Locating a Plant and Selecting a Kettle.
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The Use of a Pyrometer.
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Cleaning Sandy Castings with Sulphuric Acid.
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Drying the Work.
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Dipping the Work in the Molten Metal.
The Formation of Dross in the Kettle.
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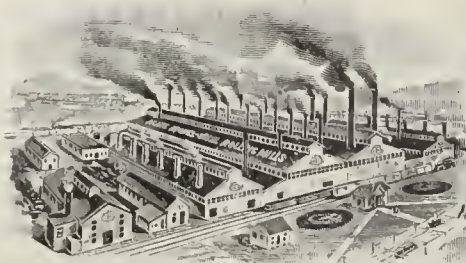
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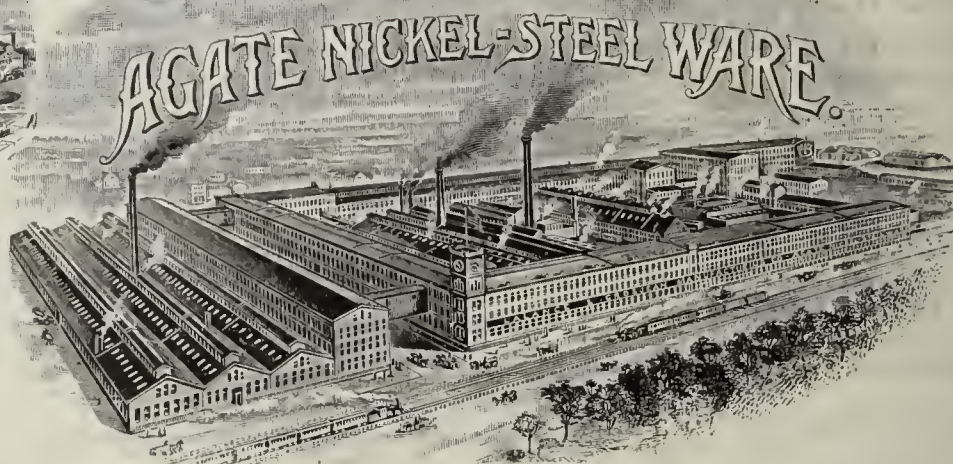
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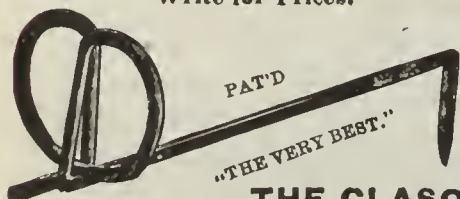
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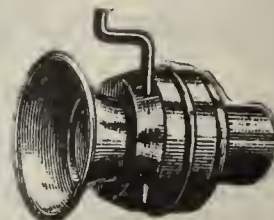
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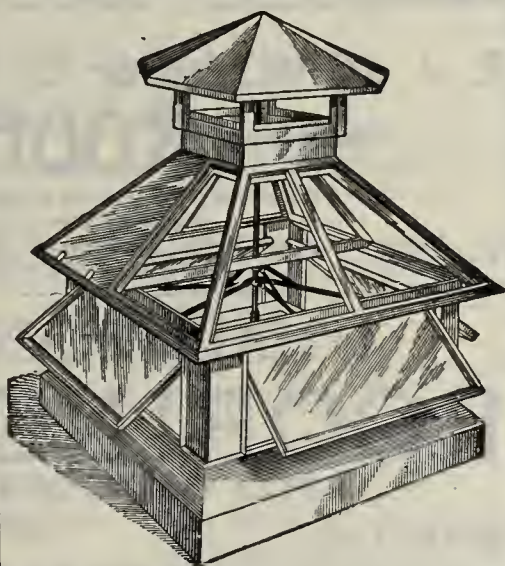
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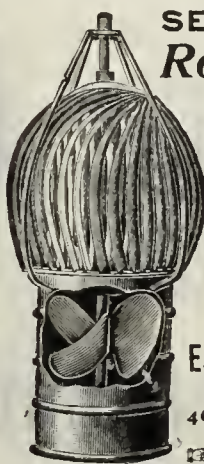
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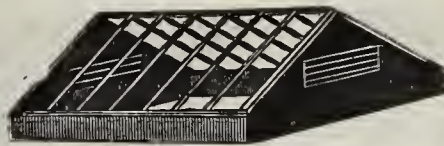
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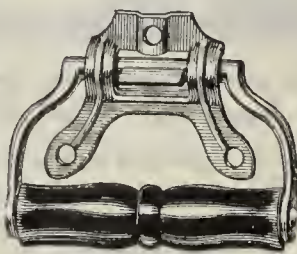
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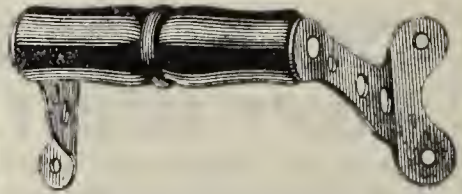
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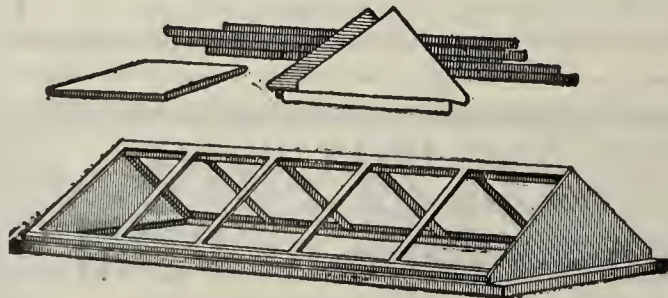
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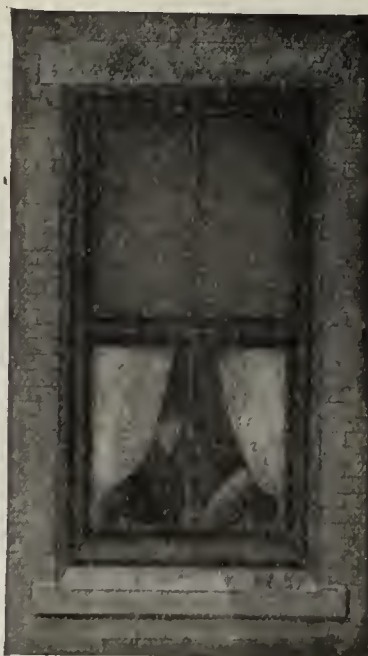
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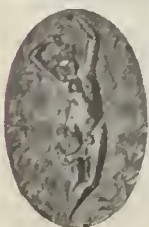


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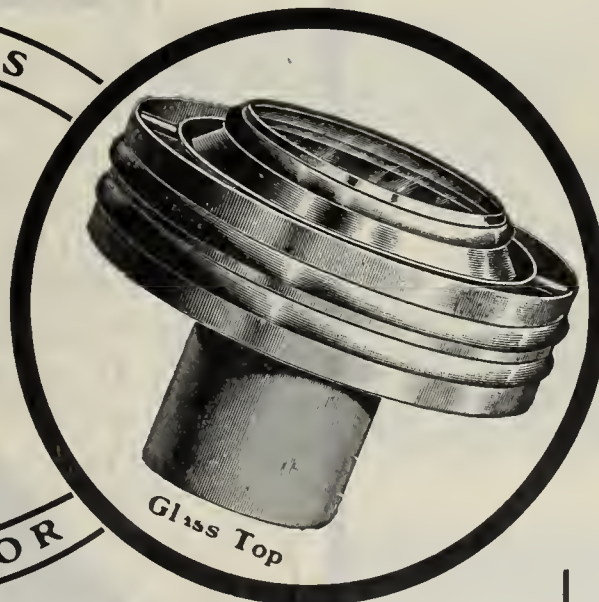
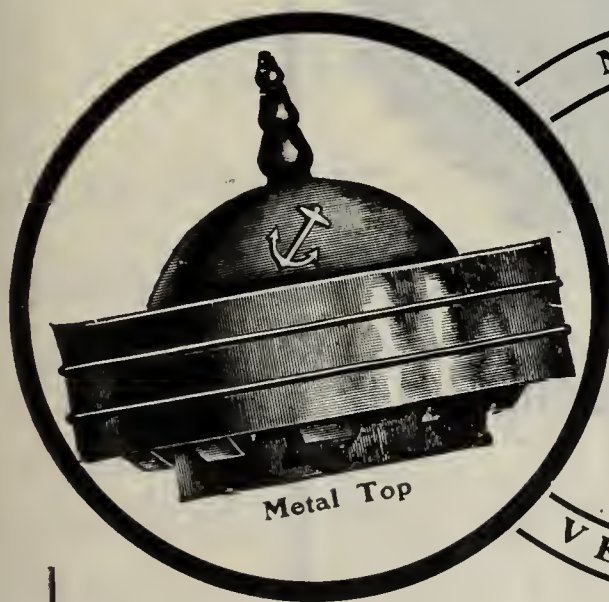
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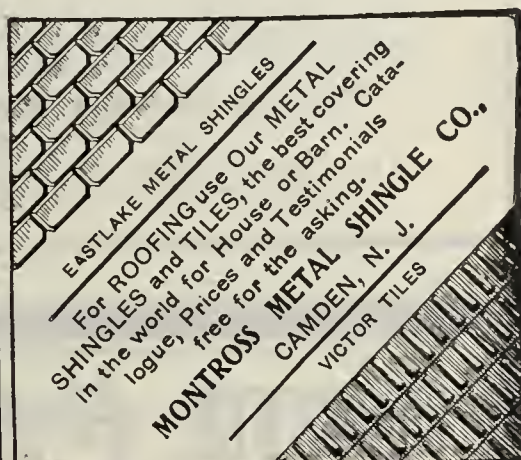
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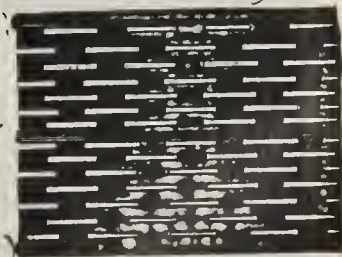
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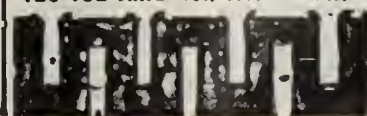
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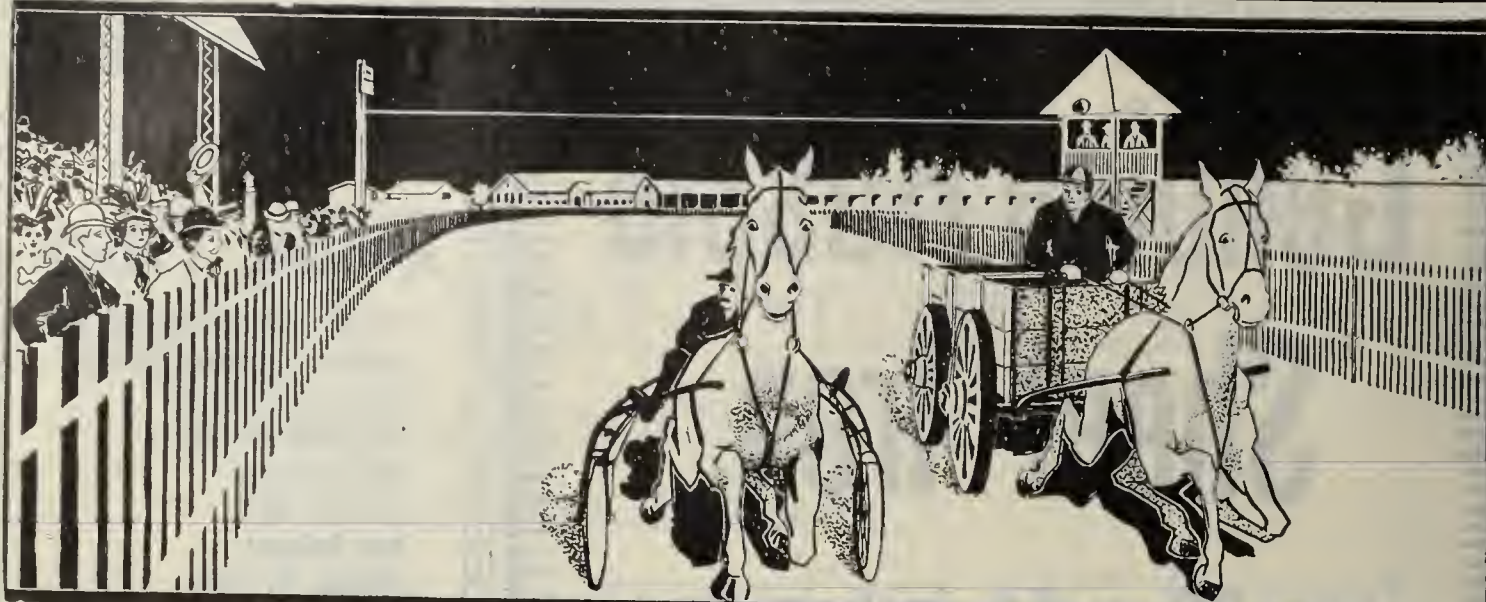
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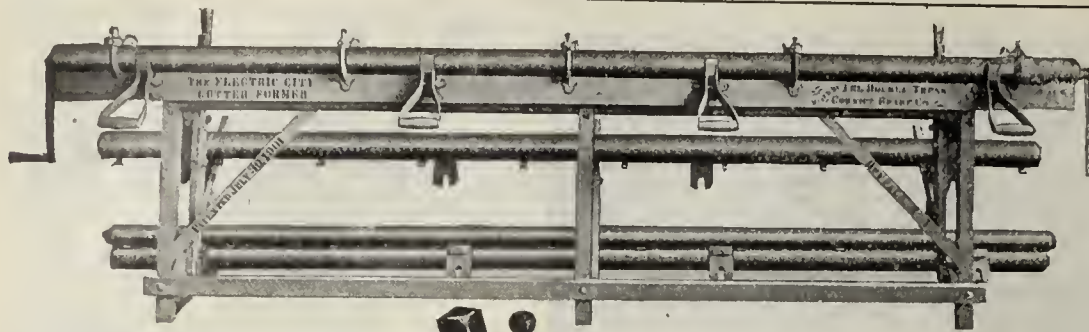
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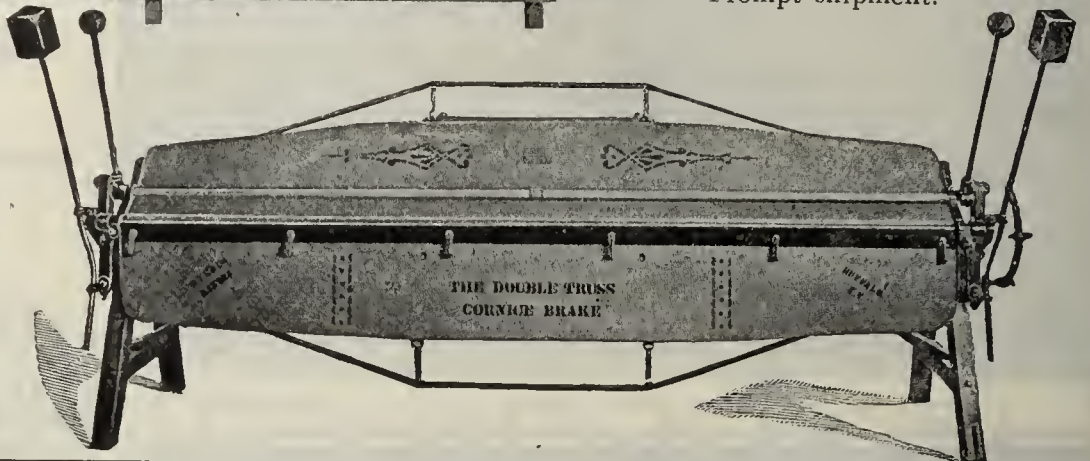


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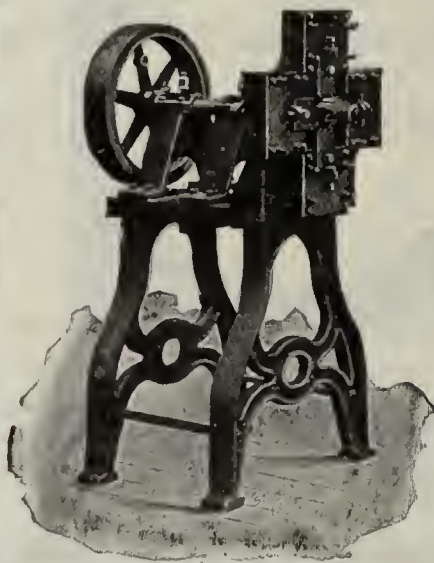
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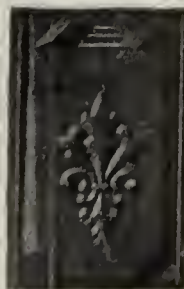
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SAGENDORPH'S METAL SHINGLE.

PAINTED STEEL, TIN
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Sizes—7x10, 10x14, and 14x20 inches.

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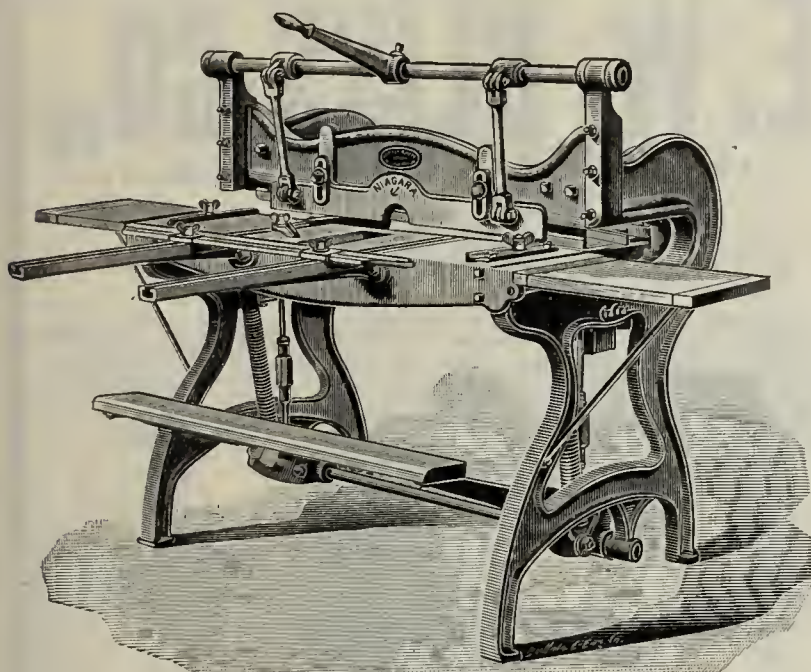
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30, 36, 42 and 52 inches long.

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For No. 16 Iron and Lighter.

These shears have a 15 or 18 inch gap, which permits of cutting sheets of unlimited length up to 15 or 18 inches from the edge. The actual cutting length is about one inch more than the nominal size, and the housings are far enough apart that sheets in width equal to the cutting length can be passed through from front to back.

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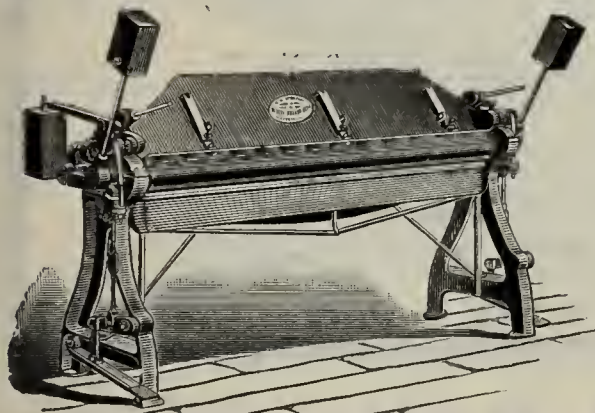
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THE PECK, STOW & WILCOX CO.

New York,
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Tinsmiths' Tools
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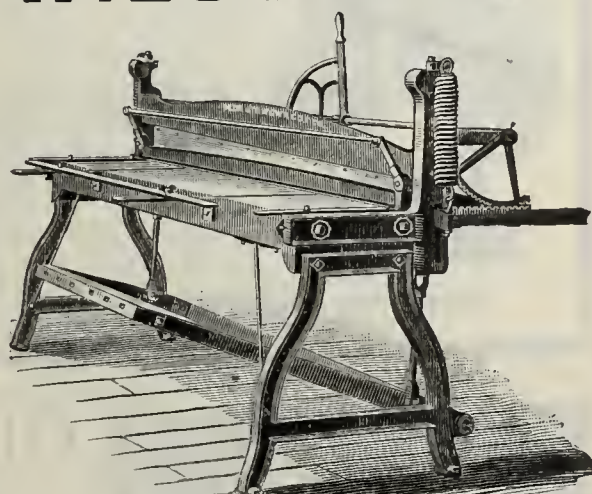
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Hundreds sold and never a complaint. Works easily and rapidly. The universal verdict is, IT IS THE BEST IN THE WORLD.

96 inches long.

Our Improved Eureka
Cornice Brake. Will bend
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With Lever Arc, Automatic Gauge. Will cut No. 2 iron,
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HERCULES SHEARS

make the cutting of sheet metal of heavy gauges an easy task for the mechanic and a profitable operation for the employer. With them a man can cut No. 12 steel with one hand on the lever, leaving the other hand free to guide the stock while cutting elbows, ties and circles, as small as 8 inch radius; this is done without burring or buckling either piece, thus avoiding hammering and straightening, which add to the cost of the product. They split sheets of any width or length up to No. 12 gauge, cut wire or bar-steel $\frac{1}{8}$ inch thick, cut off and mitre angle iron $\frac{1}{8}$ inch thick, and do it perfectly.

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Capacity, Foot Power 7 min. to a box; Hand Power 10 min.

Built in two sizes, 21 and 31 inches wide for hand, foot and belt power.

It will edge 27 iron and tin for roll or flat seam roofing.

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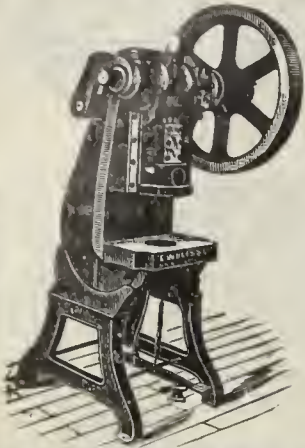
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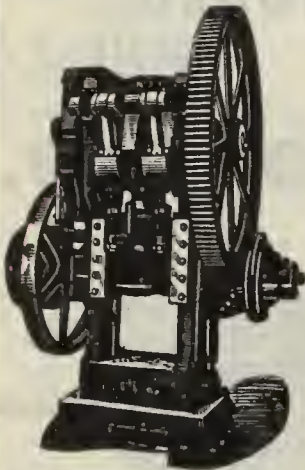
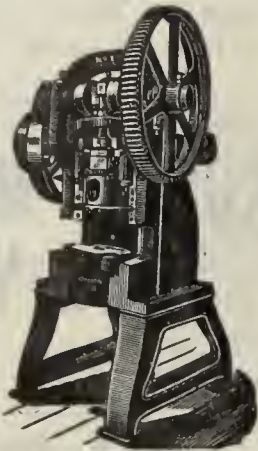


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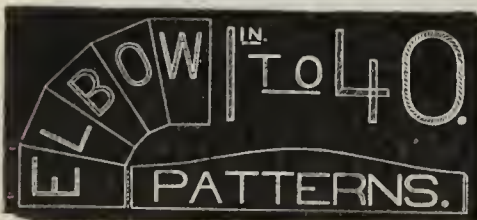
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Correspondence Solicited.

Estimates Furnished.

Also Owning and Operating

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160 Perfect Elbow Patterns

From 1 in. to 4 in. in diameter, made in 2, 3, 4, 5, 6, 7 and 8 pieces, on heavy, blue print paper.

Just what every Furnace Man needs.

A chart with each set of patterns showing all the different angles possible from 160 patterns, giving the degrees of each angle.

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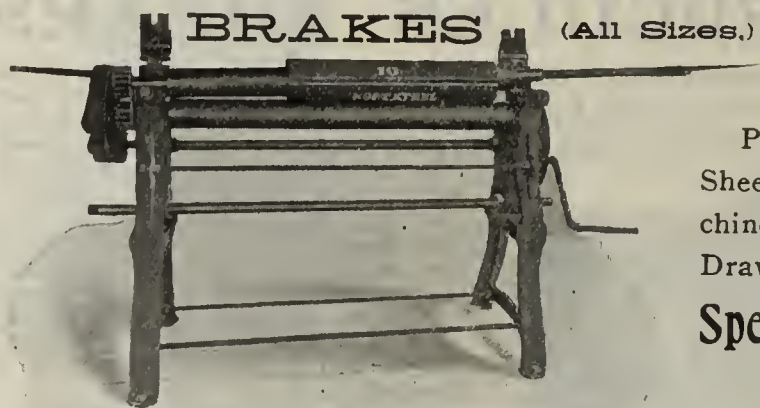
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Manufacturers of all kinds of

METAL WORKERS' MACHINES.



4 in. SLIP ROLL FORMER.

Heavy and Light
Squaring Shears.

Punches, Presses,
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Drop Presses,
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Special Machinery

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For any and all Purposes.

SHEARS, PUNCHES, Etc.

SPECIAL SHEET METAL
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FROM SPECIFICATIONS
PRODUCED ON SHORT
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Write for Prices and Descriptive
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IMPROVED "V" Crimping and Corrugating Machine.

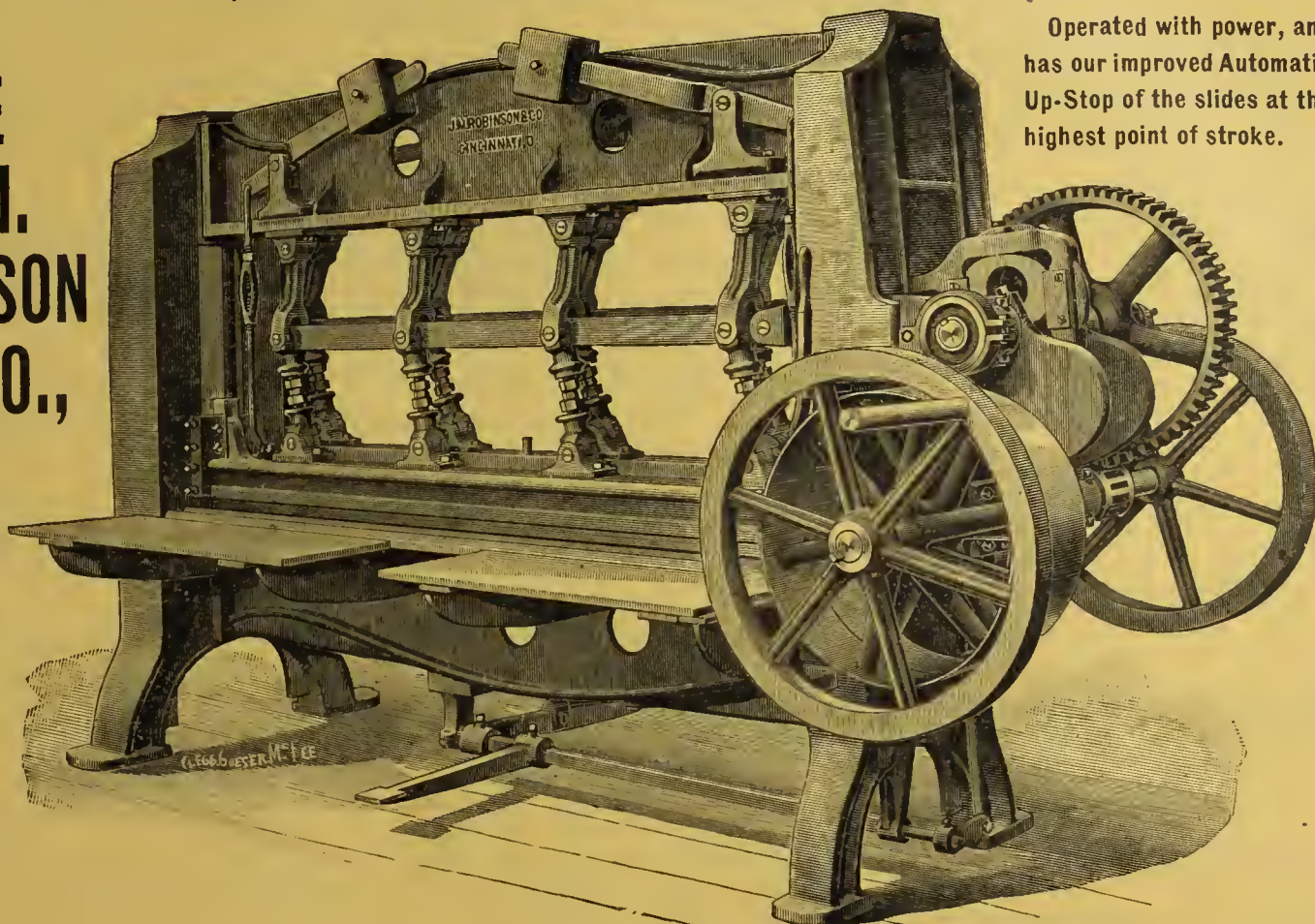
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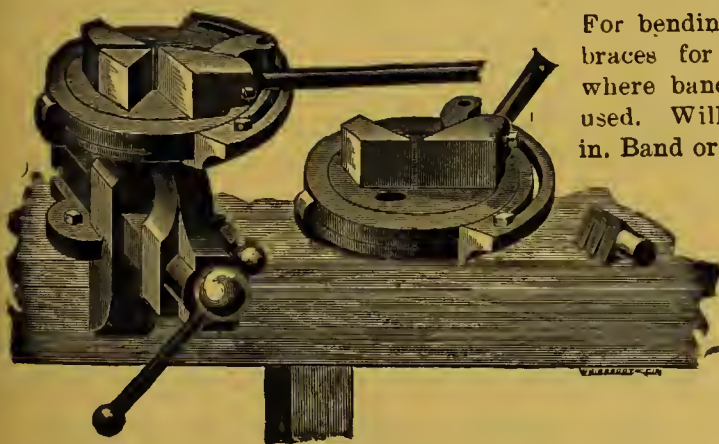
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W. 2d St.,
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Operated with power, and has our improved Automatic Up-Stop of the slides at the highest point of stroke.

A New Bending and Forming Tool



For bending and forming stays and braces for cornice or other work where band iron or steel are to be used. Will bend any shape $\frac{1}{4} \times 2$ in. Band or Bar.

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20th Century Groover
for Hand Power. We also make them
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20th CENTURY GROOVER, Handiest out.
Operated from one position. Automatic knock-out and Quick Return. Grooves 22 gauge.
Write for circular. Made by
W. A. WHEELER, Indianapolis, Ind.

IMPROVED
**Patent Automatic Can Body
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COMBINATION PRESSES and DIES,
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SHOVEL MACHINERY.

We build complete equipments and control the latest patented machines for this work.

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We make the very latest improved machinery for manufacturing cans and pleted tinware.

STEEL RANGE MACHINERY.

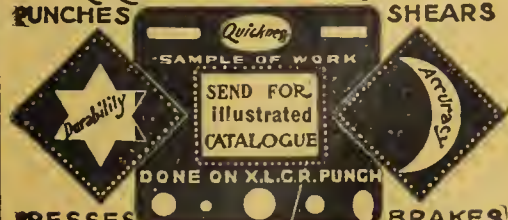
Recognized leaders for machinery and dies for oil and gas stoves, and gas and steel ranges.

For further particulars write

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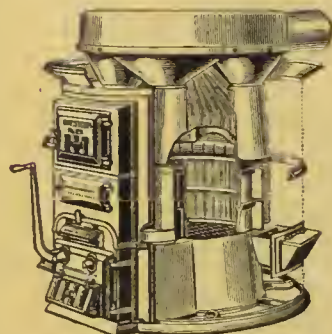
BEST HAND AND POWER MACHINERY
FOR RANGE & SHEET IRON WORK
PUNCHES SHEARS



PRESSES BRAKES
EXCELSIOR TOOL & MACHINE WORKS
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Sixty-Six Years, 1836-1902.

SIXTY-SIX years is quite a lifetime.
When a *business* lives and continues to



grow for that length of time, you can put it right down that the goods represented are *honest*. The Barstow Stove Company has made stoves and furnaces since 1836, and their reputation for quality and utility has grown each year. You are looking for the best in furnaces. The above is the reason why you will find it in the **Bay State Furnace**.

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The "TAYLOR
OLD STYLE"
brand of roofing tin
is well advertised
by its imitations.

Over 150 of these
have appeared
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Sole Manufacturers
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Genuine and Original.

Established 1810.

20 000 CONTRACTS

would be considered a good record. We have lighted over that number of Churches alone in all parts of the world. A pretty sure guarantee of satisfactory work. Correspondence invited.

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Dunbar Foundry Pig Iron.

Dunbar Connellsville Coke for Foundry Use.

American Sheet Iron Co.'s Sheet Iron.

American R. G., cleaned, of uniform black color.

Dealers in all kinds of Iron and Steel Scrap.

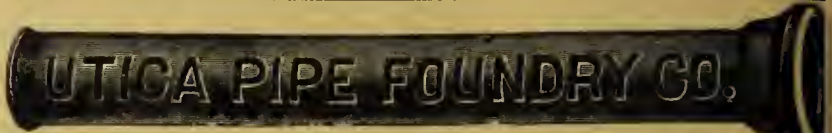
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TINNERS'

TOOLS and MACHINES.

TINNERS' SUPPLIES

186, 188 & 190 Water Street, at
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"UTICA PIPE IS THE BEST." Cast Iron Soil Pipe. Cast Iron Water Pipe. Plumbers' Supplies and Lead Pipe.
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If you want the best line; the line with the most attractive and progressive selling features, look into the merits of the

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Line of Ranges,

Steam and Water Heaters;

Hot Air and Combination Furnaces.

SMITH & ANTHONY CO., Boston.

A Cheap Priced

stove is usually shoddy. Shoddy means half fitted. You fit the other half which makes the shoddy cost more than first class goods. There's no use in talking if you believe in quality — sell

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Write the Weir Stove Company, Taunton, Mass.

McCLURE'S Genuine Charcoal Iron Redipped Roofing Tin.

McCLURE & CO.,

Manufacturers of Tin Plate,

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211, 213 and 215 Second Ave.

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The Metal Worker

A WEEKLY JOURNAL OF THE
ROOFING, CORNICE, TIN, PLUMBING AND HEATING TRADES.

With which is Incorporated The Stove and Tin Trade Journal, the Sheet Metal Builder, and Metal.

LXVIII.
 NUMBER 3.

NEW YORK AND CHICAGO, JULY 19, 1902.

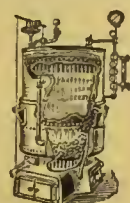
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USE MILLER'S REVERSIBLE RATCHET DIE PLATES

With Hill's Solid Dies $\frac{1}{8}$ to 3 inches.
 Especially adapted for Threading Wrought-Iron
 Pipes in Cramped Positions, as in Trenches, or in
 Corners where lack of space forbids the Use of the
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The Gorton Side Feed Boilers

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INVESTIGATE FOR YOURSELF.

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Cornice and Roofing Copper,
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SEND FOR STOCK SHEET.

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Brass and Copper.

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AMERICAN STEAM and POP GAUGES, SAFETY VALVES.

Heating Specialties. American Steam Gauge & Valve Mfg. Co., Bismark St., Mass., U. S. A.

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Does it affect your customers? Even if the strike were settled to-day, coal will be high in price this winter. You will have some furnaces to buy this fall. How important for both you and your customer that the Paragon Furnace should be installed, which deals so gently with that little pile of real Klondike coal. And then there is no waste to the fuel the Paragon does use. Clean, perfect combustion is possible only in the Paragon.

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A good galvanized
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American Sheet Steel Company, New York

Steam Specialties.

DIFF and
 VATOR VALVES, PRESSURE VALVES
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 DUCING VALVES, ARATORS
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KIELEY AND MUELLER,
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The highest grade of Cooking Apparatus is found
 in

Stewart Stoves

They require fewer repairs, and, therefore, you
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FULLER & WARREN CO., Troy, N. Y.

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Silver, Nickel Platers and **MATERIAL FOR DRYING PURPOSES.**
 Brass Goods Mfrs.

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CROSBY SPRING-SEAT GLOBE and ANGLE VALVES, IRON and BRASS.

All working parts renewable without taking the valve
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Perfectly tight under all pressures of steam, oils or acids.
 Warranted to give satisfaction under the worst conditions.

Received the **GOLD MEDAL** At the Pan-American Exposition.

Insist on having the genuine stamped with Trade-Mark.

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Galvanized and Black Sheets.
 Sheet Copper, Conductor, Eave Trough.



When you see these Trade Marks
 stamped on Roofing Tin, you
 know you are getting the best.



Philadelphia, 133 Arch Street.
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READ OUR "AD"
Page 8.

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ROUND OAK

Standard of America

The Genuine Round Oak Heating Stove cannot be worn out even in twenty years if bought large enough to heat the space desired without forcing

Sometimes people buy a small Round Oak to heat a large space and melt it down Of course, that's not the fault of the stove and we cannot help it but even these instances are few

The Round Oak even in small sizes will stand a lot of abuse before it gives up

Inquiries from unoccupied territory for the sale of this famous stove solicited



The Baby Dge-Wah-Jack

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Makers of Good Goods Only

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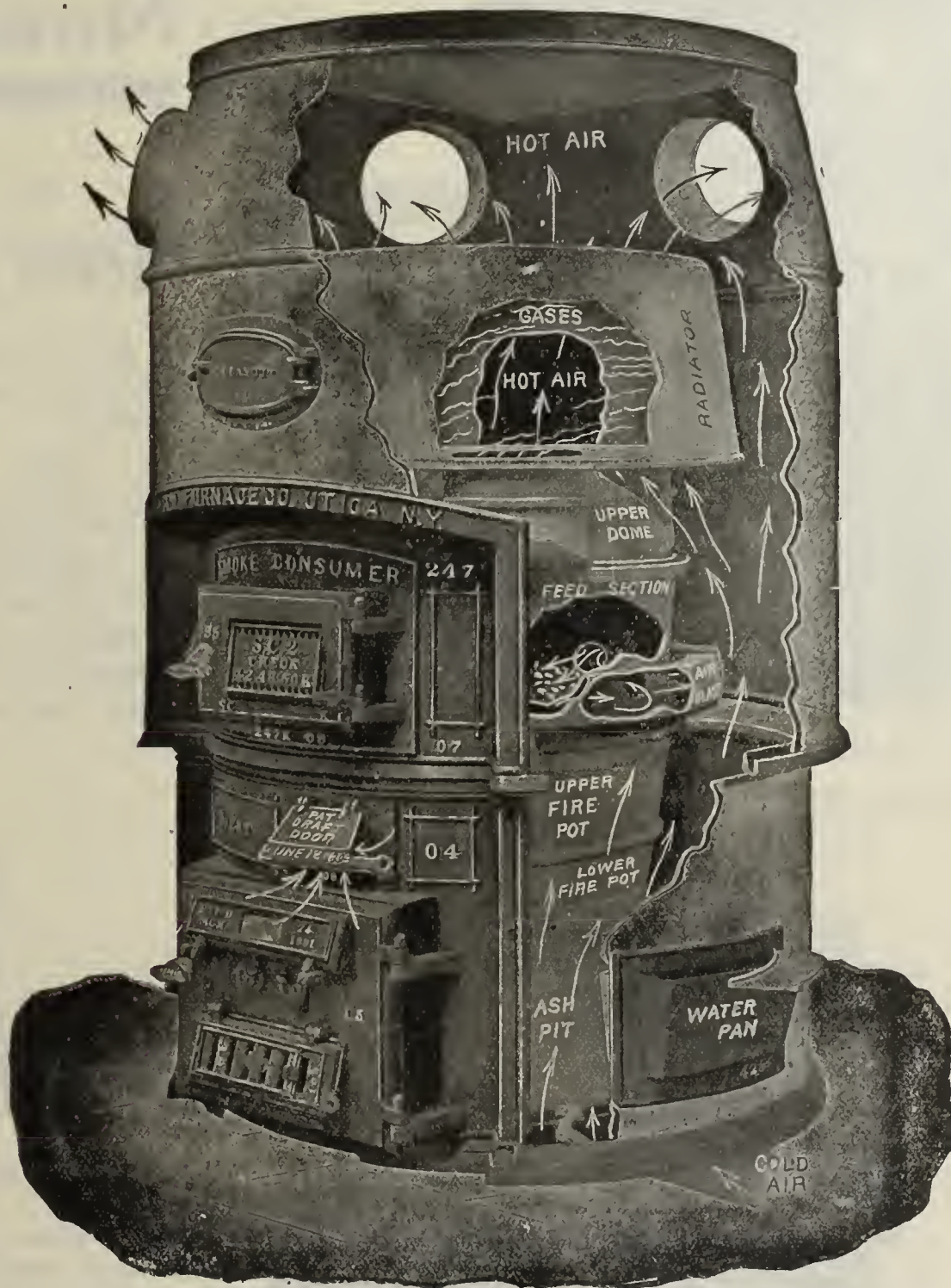
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The **KERNAN** SMOKE CONSUMER

"200" SERIES, BURNS THE SMOKE.



THE AIR-BLAST—AN INDEPENDENT ATTACHMENT, INTRODUCES HOT AIR RIGHT INTO THE BASE OF THE FLAME.

All Cast—Extra Durable—Scientific Ask Us About It.

New Boiler Catalogue just issued. Catalogue of our Acetylene Gas Machine will interest you.

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Largest Makers of Heating and Lighting Apparatus in the World.

RED CROSS PRINCESS



The Most Attractive Steel Range of moderate price ever offered

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SIZES,

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Duplex or Dockash
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Modern Gas Attach-
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A New and Elegant 6-hole Cast Range of medium price

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UP-TO-DATE in every
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Large square ovens,
with thermometer if de-
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Draw-out Grate,
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8 and 9-20

Also with Top Pouch
Feed and Iron Linings.

A Strictly In
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1410

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THE ROSS LINE

Best Features of
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ROSS OAK



Airtight Oak, Made
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10 in. Firepots

Manufactured by
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NEW ROYAL

The Grandest Base
Burner ever produced.

PERFECT IN OPER-
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Magnificent in orna-
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Every stove a Double
Heater.

Firepots 13 1-2, 15, 16 1-2
in. inside measurement.

Three Sizes,
Nos. 93, 94, 95.



The

GARNET

An entirely new
medium priced Base
Burner of the most mod-
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ornamentation.

Full circulating flues
with double heaters.

Firepots 11, 12 1-2,
14, 15 1-2 in.

Four Sizes,
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FOREST CINDERELLA

An Air-Tight Stove for Wood.



Cast Top. Cast Bottom. Cast Linings.
Top and End Feed. Reversible Pipe Collar.
Graceful Outlines.
Neat Decorations Screw Drafts.
Machine Fitted Door.
Body Made of Oak Stove Steel.
No Rods.

BESIDES:

It has two features which competition can neither beg, borrow nor steal—viz.,

A Record and a Reputation.

Its Record—

Three years old and never one relined.

Its Reputation—

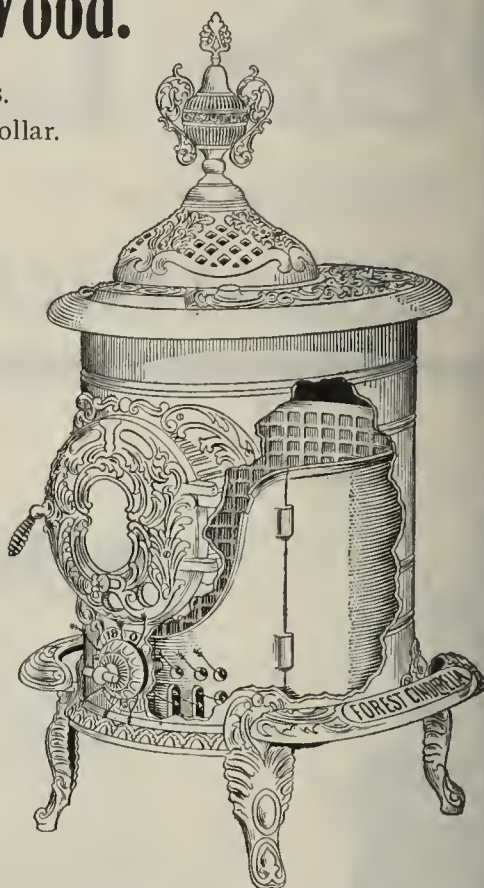
The most durable Air-Tight made, yet medium priced.

"Made in Pittsburgh, Pa."

—BY—

PITTSBURGH STOVE & RANGE CO.,

Western Sales Agent, W. D. SAGER. 38 to 40 Michigan St., Chicago, Ill.



"MODEL"

Wrought Steel Ranges

FOR 1902-03.

Best on Earth.

Price is Right.



Have you examined the Fire Box on the Model Line? Have you seen our Patented Oven Door, which does so much to popularize the Model Line with the Trade and Customer? Then there is "the Long Felt Want" kind of Damper, to say nothing of the Oven Construction. These are only a very small portion of the "Special Features" embodied in the Model Line. In the construction nothing but the very best material and mechanical skill attainable is made use of.

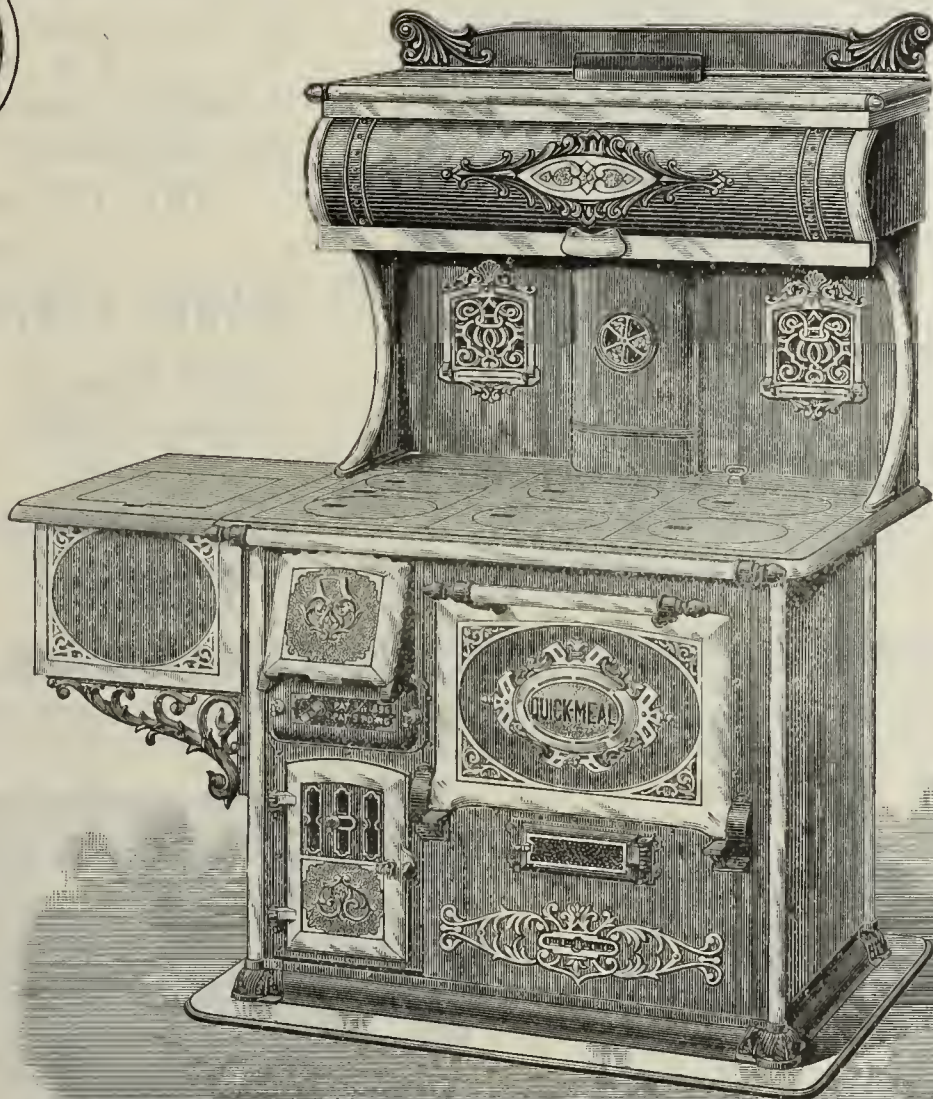
Space will not permit of but the briefest description, so send for

CATALOGUE 10.

THE PORTSMOUTH STOVE & RANGE CO.
PORTSMOUTH, O.

The Busiest Makers of Stoves and Ranges in the World.

QUICK MEAL



ENAMELED STEEL RANGES

Are made to meet the demand for a High Grade and High Finish Steel Range. Their walls are triple lined and extra heavy. The Oven Plates are well braced and are formed up in such a shape as to prevent warping.

The Nickel Ornaments and outside trimmings are neat and well proportioned, while the enamel on the walls is baked on, giving the Range a handsome and smooth finish. Wherever the wall is exposed to intense heat the enamel is protected with extra asbestos, or a piece of sheet steel of the same finish, with air passing between it and the body of the Range.

“Quick Meal” Ranges Speak for Themselves.

RINGEN STOVE CO. SAINT LOUIS.

NONE CAN BE BETTER MADE.

NONE ARE MORE HANDSOME.

..MAGEE GRAND.. Combination Range.

EITHER COAL OR GAS, OR BOTH TOGETHER.



A DISTINCTIVE FEATURE.—You can sell the Range now and add the Gas Attachment at any time.

It Stands in a Class
by Itself,

and reduces cooking to the
science of absolute ease and
uniform goodness.

Cut shows Gas Oven,
Broiler and Two-Burner At-
tachments.

Oven is $10\frac{3}{4}$ in. wide, 18
in. deep, $9\frac{1}{4}$ in. high.

Send for further informa-
tion and prices.

DO IT NOW.

MAGEE FURNACE CO.

32-38 Union St., Boston.

WESTERN AGENCY:

86 Lake St., Chicago.

Steam and Hot Water Boilers.
Furnaces, Warm Air or Combina-
tion.

Ranges, Stoves, Etc.

WROUGHT STEEL RANGES LIKE THE "PACIFIC"

Are best because they're made stronger, better,
more perfect than any other similar construc-
tion. You should write for prices and secure
our Catalogue.

It is made with High Closet, Rolling Front,
Six Holes, for Hard or Soft Coal; is the latest,
best and handsomest Steel Range ever offered,
one that you can offer as simply "out of sight"
compared with that sold by the peddlers. Try it.

... THE ...

JOHN VAN RANGE CO.,

Warerooms:—419 ELM ST.

Factories:—6-8-10 and 12 HOME ST.,

CINCINNATI, O.



The Dangler Oil Heater, 1902

Height, 27 in.
Weight, 10 lbs.
None better.
Made of polished
Steel, with either
Brass or Tin
Tank.



Ornamental,
Durable,
Powerful and
Simple in
Operation.
For sale by
Jobbers and
Dealers everywhere.

THE DANGLER STOVE & MFG. CO., CLEVELAND, OHIO, U. S. A.



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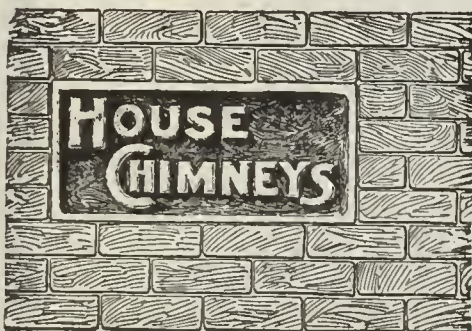
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DEFECTIVE FLUES . . . 33-35

This article presents information resulting from a wide, practical experience of the writer, and gives sound advice on some of the details of chimney construction.

HOW TO IMPROVE A WEAK CHIMNEY . . . 36-40

VARIOUS FORMS OF VENTILATORS or CHIMNEY TOPS 41-45

CONDENSATION IN STOVE PIPES . . . 46, 47

SMOKE PIPE FOR WOOD FURNACES . . . 48

REMEDYING DOWN DRAFT IN CHIMNEY . . . 49-51

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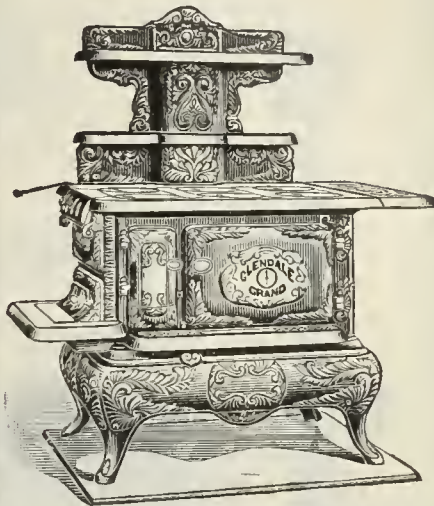
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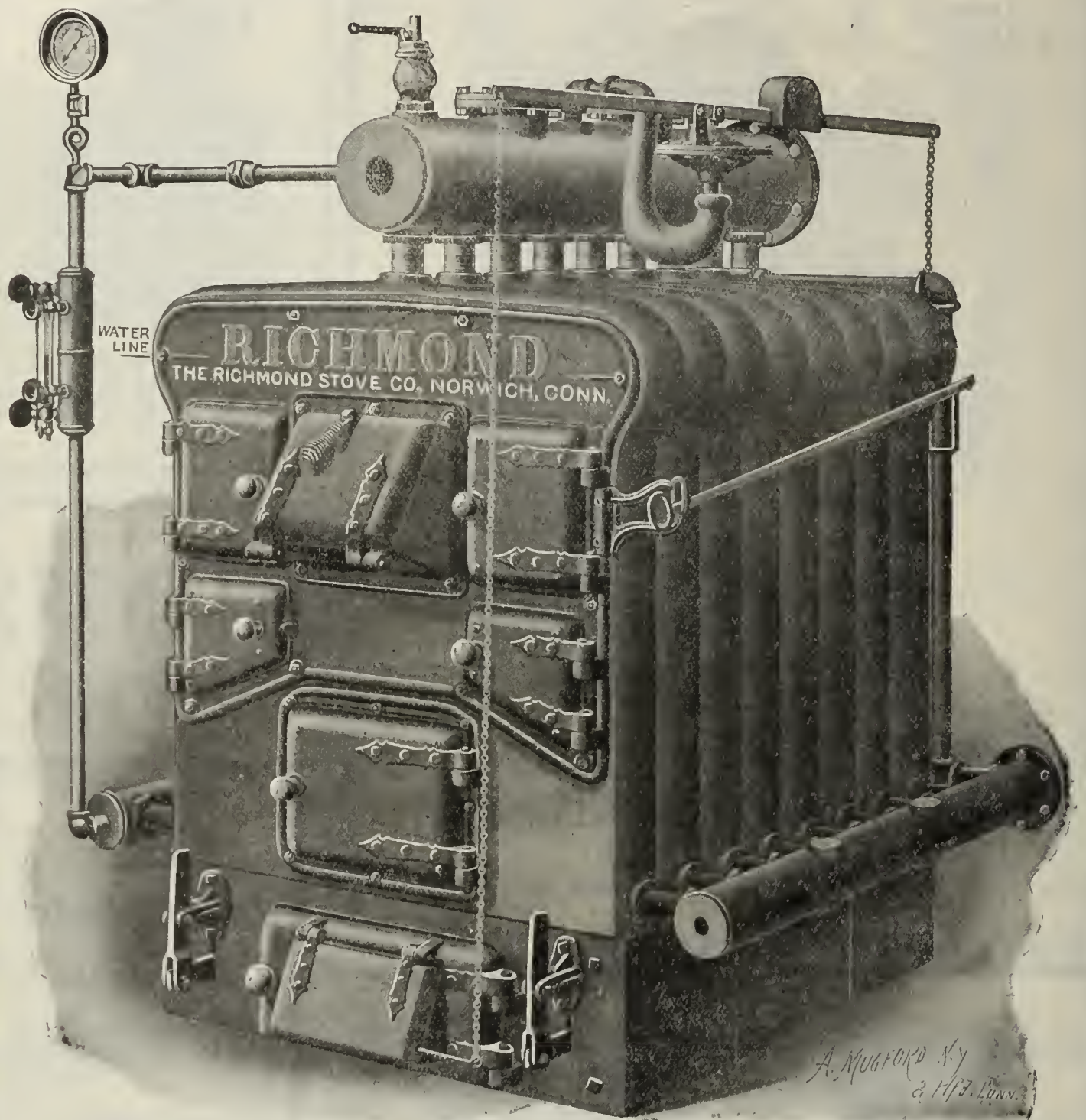
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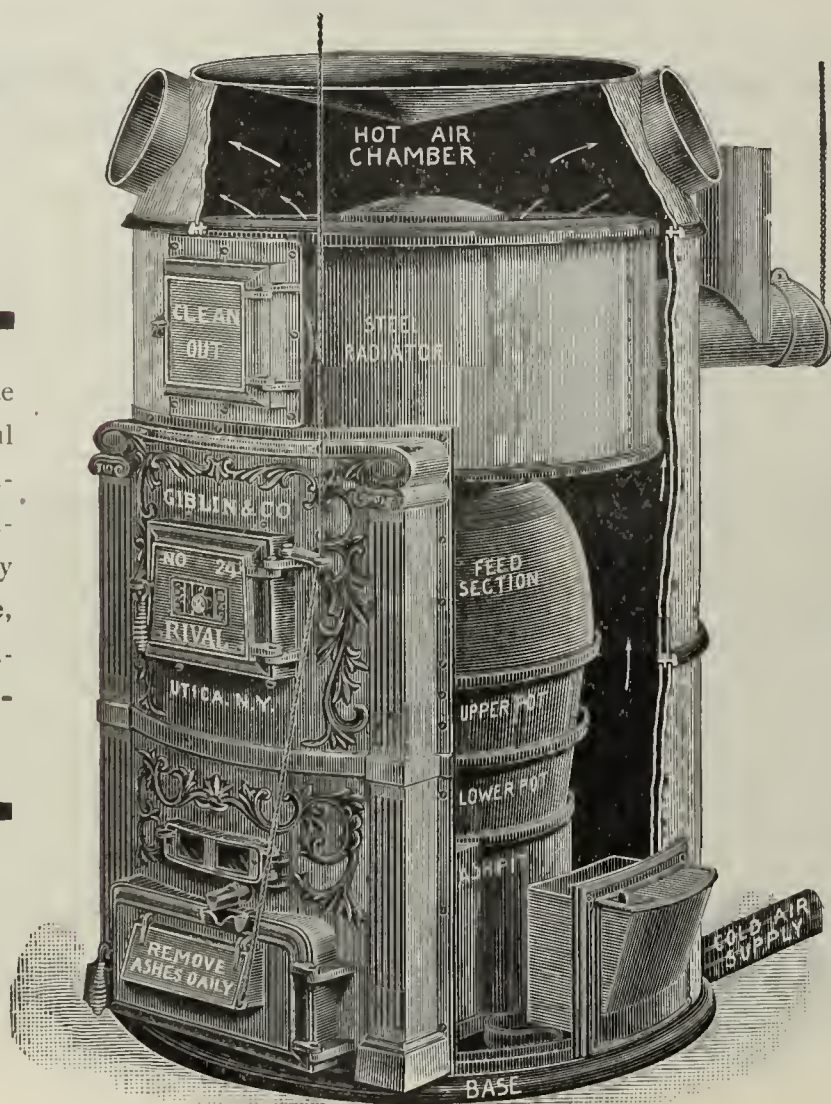
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We have hundreds of agents handling our furnaces, but we want hundreds more, and want one in every city and town in the United States where our furnaces are not now represented.

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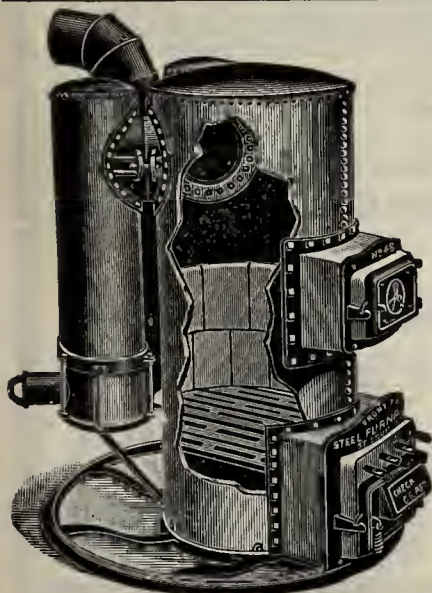
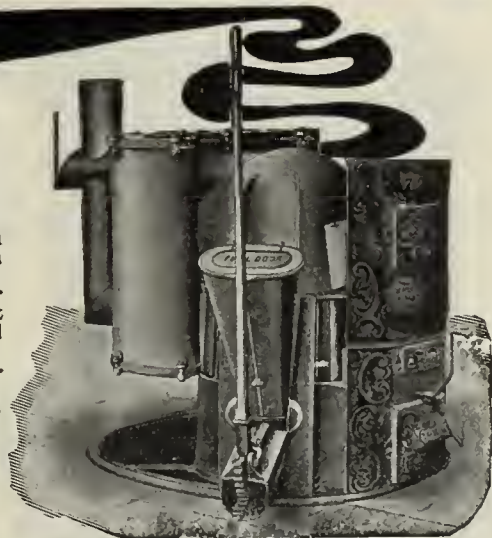
you have not the trade and are not making the money you might. Just a pull or two of the lever feeds the new coal from underneath.

The Underfeed Furnace consumes less fuel than any other furnace ever built. The coal is burnt more slowly. All the heat units from it, as well as from the smoke, are utilized and all smoke eliminated.

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are built on vertical lines; air comes in direct contact with entire heating surface.

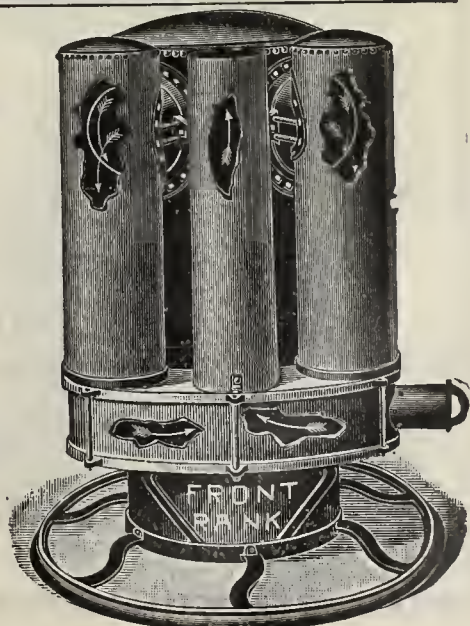
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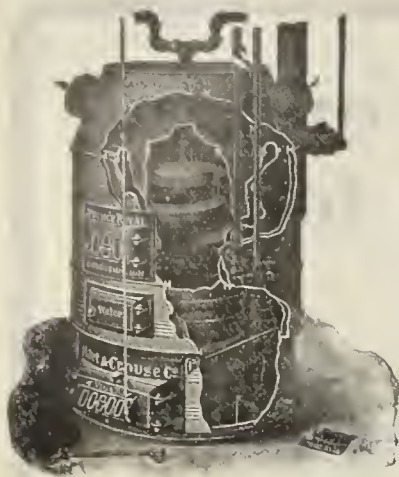
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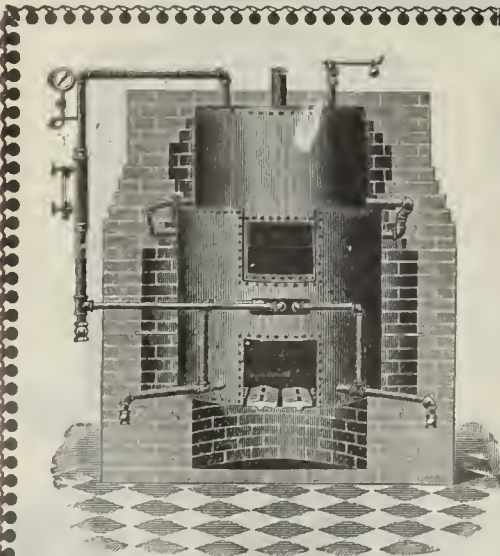
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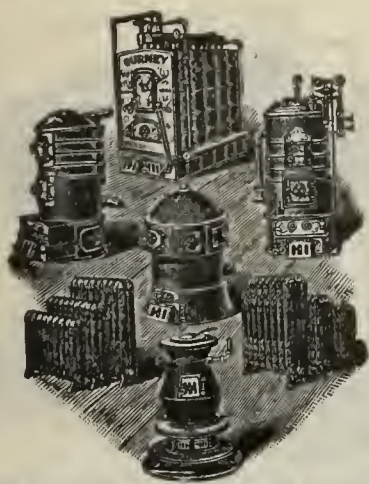
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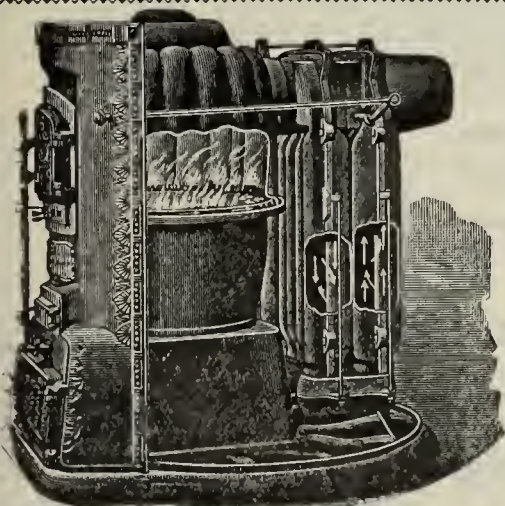
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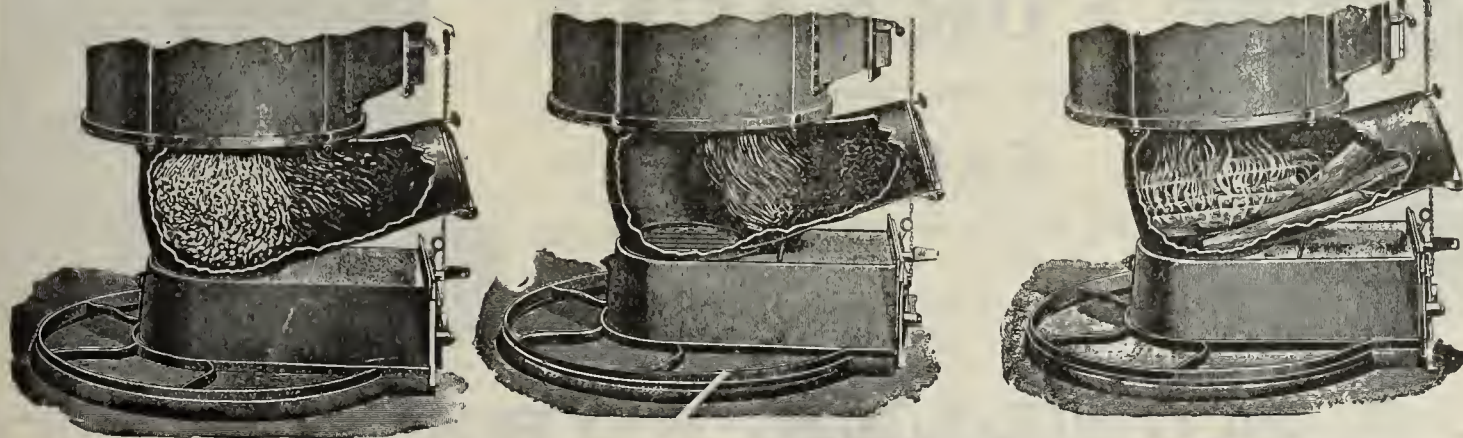
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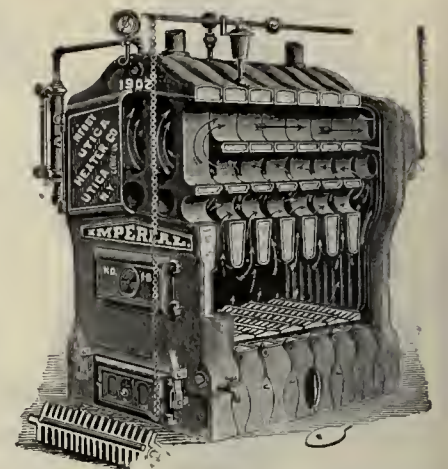
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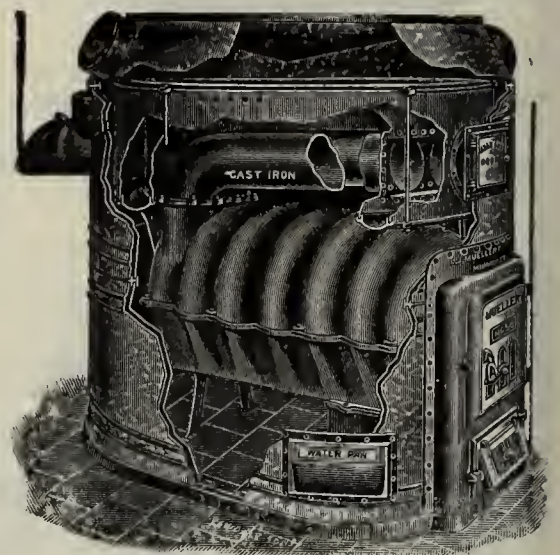


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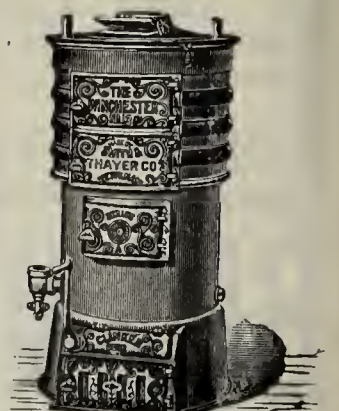


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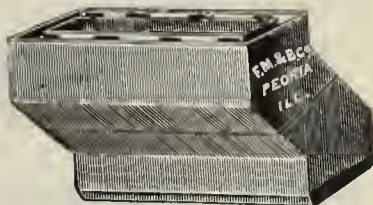
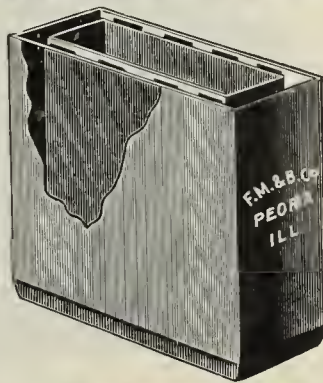
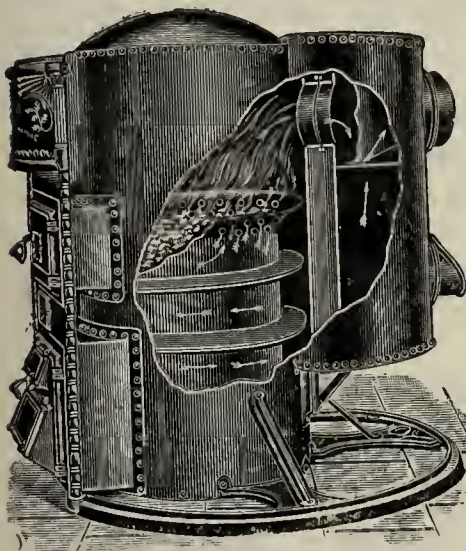
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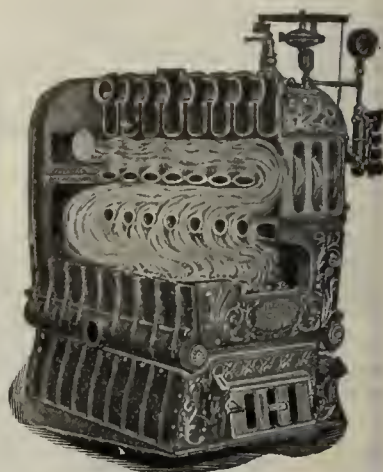
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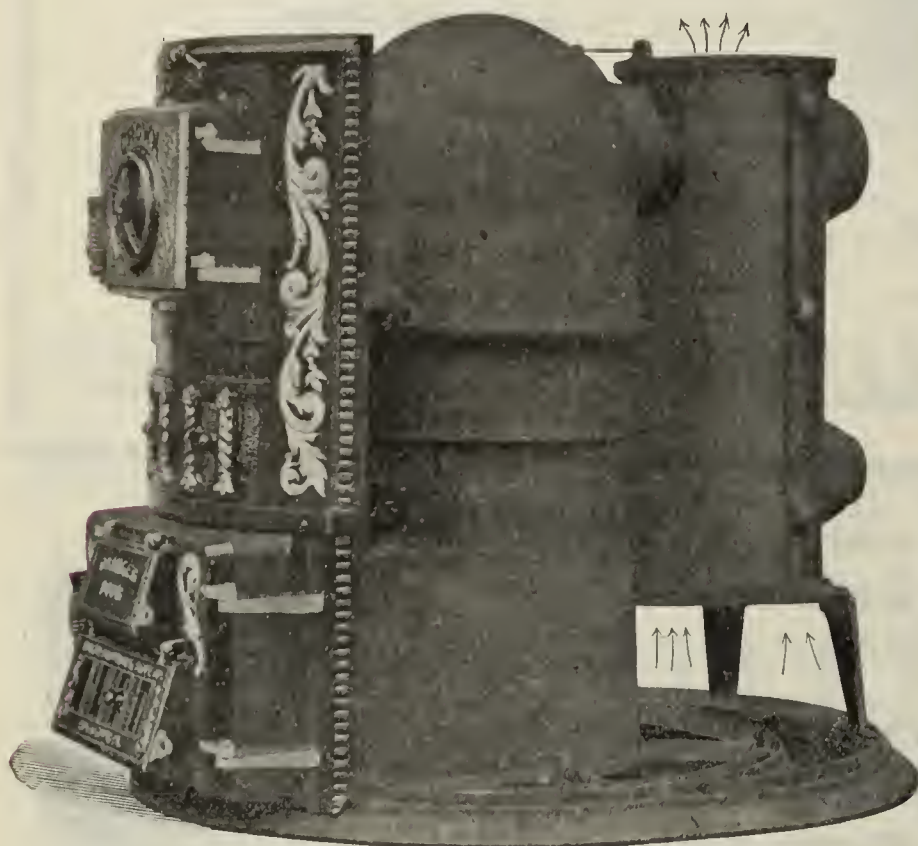
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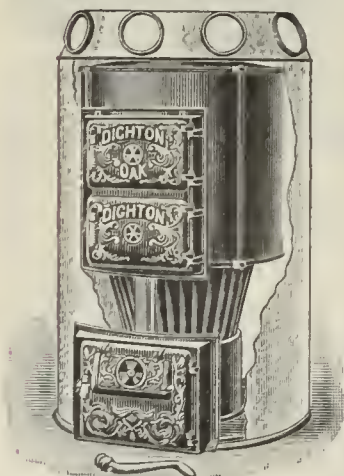
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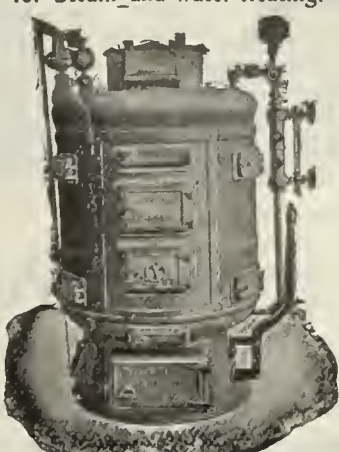
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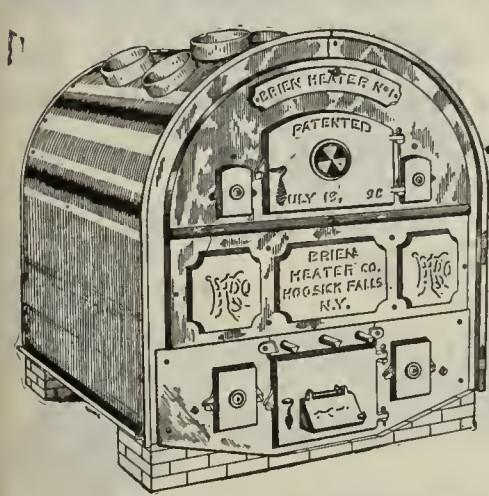
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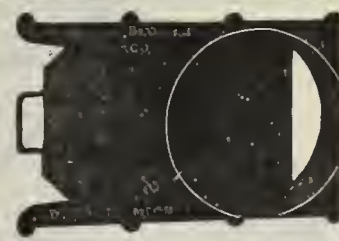
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and inexpensive.

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THIS has been advertised extensively for years.

THIS is the one your customers have frequently asked you about.

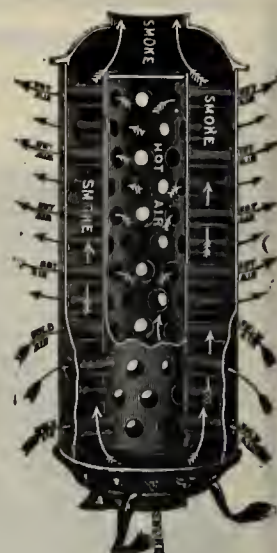
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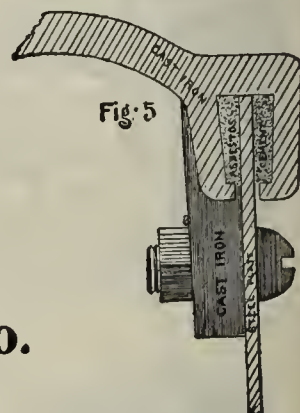
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GILT EDGE



stands for best when applied to furnaces. The many dealers who have installed and the thousands of householders whose homes have been heated by our furnaces show they like the Gilt Edge, as will be seen by the testimonials they have written. Let us send you a few of them.

The Keystone Joint used in Gilt Edge Furnaces is the only permanent gas tight steel and cast iron joint on the market.



R. J. Schwab & Sons Co.
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First on the Market. 150,000 Sold.

STANDARD

Oven Indicator



430 FLAT BACK.
3 inches in diameter.

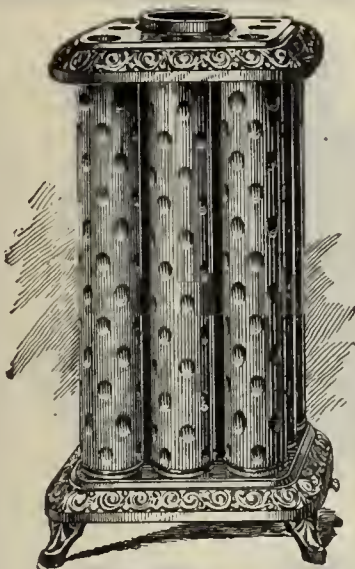
has a dial graduated in the simplest possible manner, as can be seen. This graduation was adopted because every oven has its own peculiarities, and an indicator adjusted to one oven might be incorrect for another. The *Standard* can be adjusted to any oven and has no complicated parts. Made in 3 styles.

Send for circular.

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Don't you think if you can show your customers an article next fall that will enable them to get as much heat out of one ton of coal as they did last winter out of two tons, they will be glad to buy?

New Era Radiators

WILL DO IT.

Obtain full information early and be prepared to present facts and meet the demand.

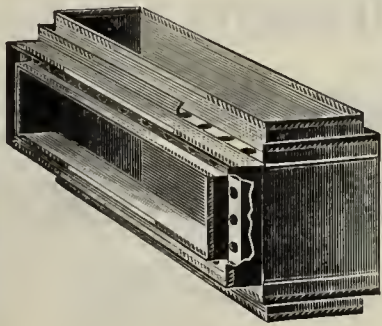
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FURNACES

EXCELSIOR HEATING SPECIALTIES

PIPE



Excelsior

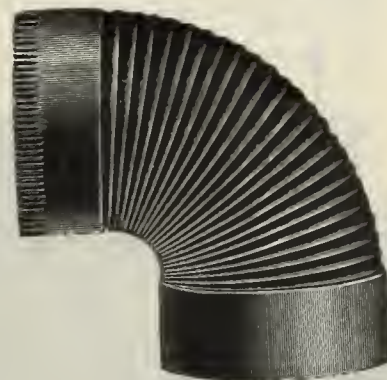
FURNACE PIPE,
HOT AIR REGISTERS,
STOVE PIPE ELBOWS,

ARE ALL SELLING AT

MUCH BELOW

their real value.

This is also true of many other things which we make, as our Quotation Sheet will demonstrate.



EXCELSIOR IDEAL ELBOW

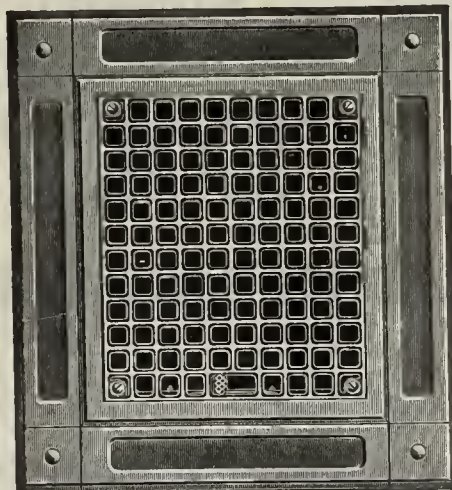
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EXCELSIOR STEEL FURNACE CO.
38-40 W. MONROE ST.-CHICAGO.

REGISTERS

H. & C. WROUGHT STEEL REGISTERS

FURNISHED WITH
WROUGHT STEEL
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FACE PLATES, AND
IN ALL FINISHES.



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HANDSOME in SIM-
PLICITY of DESIGN.

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BLUE FLAME OIL STOVES,
GASOLINE STOVES.

LARGEST JOBBERS
in
NEW ENGLAND.

GAS RANGES,
FURNACES, STOVES,
RANGES AND REPAIRS.

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Third Reason:

BECAUSE THEY SAVE COAL

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Established 1850.

Warm Air Furnaces, Ranges, Steam and Hot Water Heaters.

Works: Newark, N. J.

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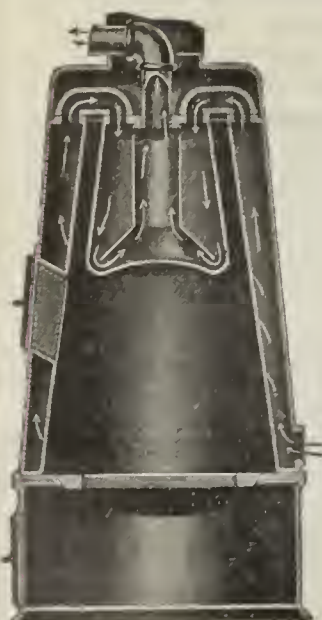
The Robinson Tubular Warm Air Furnaces

give universal satisfaction wherever used.

They are up-to-date in every respect and have many special features not found in other furnaces.

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Best Domestic Water Heater.

Heats water for a bath to 150° in eight minutes. Davis Steam and Hot Water Heaters are made in several sizes, and for heating buildings of every description.

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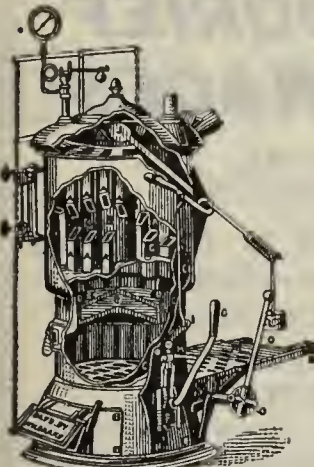
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Fine Coal Burner



For Steam or Hot Water Heating.

This boiler is made on an entirely new principle and is

The Only Boiler

that will burn Pea or Buckwheat Coal successfully.

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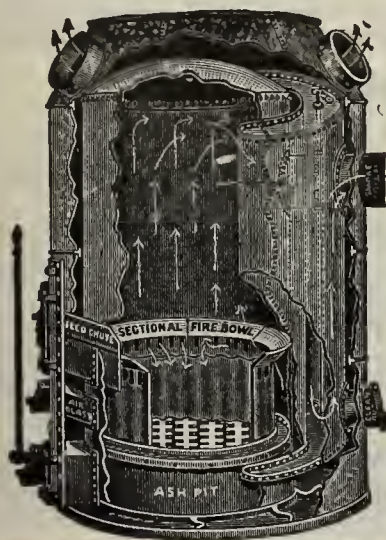
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Factory: Hackettstown, N. J.

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is a trade winner because it has points of merit peculiar to itself that can be found in no other steel furnace. Our new catalogue is now ready to mail and a description of our Hot Air and Hot Water Combination Furnace can be seen in it. We furnish either the cast iron lining or the fire brick at the same price. Our Wood Furnace is called a powerful heater by those who use it.

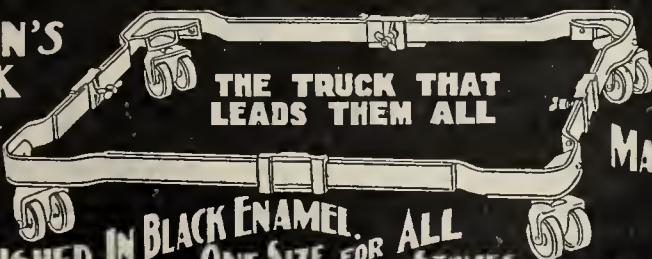
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TRUCK
CAST-
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THE TRUCK THAT
LEADS THEM ALL

STEEL FRAME
MALLEABLE IRON
FITTING

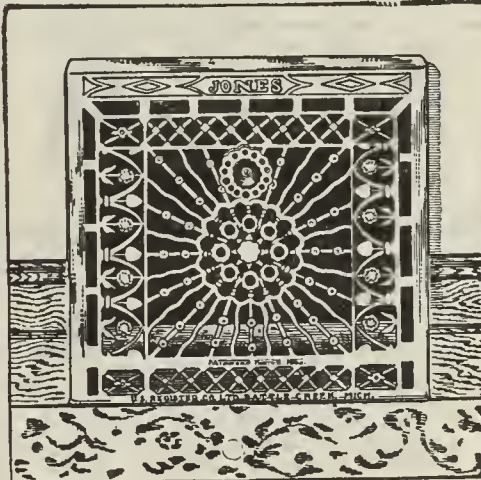
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ONE SIZE FOR ALL
STOVES.
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HEATING BY COMBINATION STOVES
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Suitable for Large or Small
Houses, Stores, Conserva-
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Heat Water Quickly.
Circulation is Positive.
No Joints Inside to Leak.

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THE JONES Side Wall REGISTER.**THE FURNACEMAN'S CHOICE.**

The one with a Double Ventilated Register Box. The
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Stoves and
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STAY SOLD? We have
been very successful in de-
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Better than a truck, as they fit any size of stove without adjustment. Made with roller bearing or plain casters. A postal brings prices.

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(Patent applied for.)

This Heater is so simple that its superiority over all others is plain. Being open at each end the cold air is taken in at the bottom, passing out at the top heated; producing a circulation unequalled by any radiator. Is easily cleaned or repaired. Takes the place of a joint of pipe. Diameter of casings, 10½ and 12½ inches. Send for prices.



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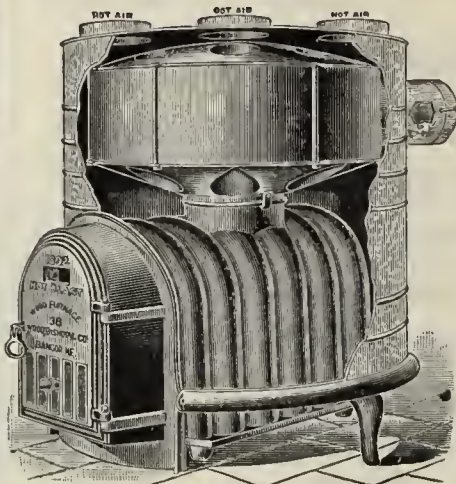
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Made With SINGLE PIECE Fire Box Body—

a practically indestructible casting, heavily corrugated to stand the strain.

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Durability, Economy,
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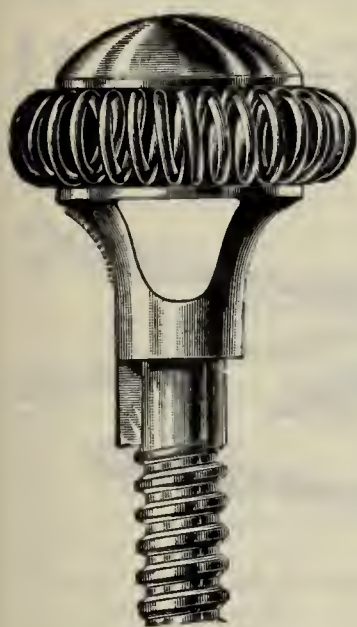
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Above Prices Net. No discount.

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Try us, we have the Stock.

Our price is right.

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Perfectly round and true to size. With long ends, DOUBLE LOCK SEAM in throat or under side of Elbow.

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*and don't pay for it if not
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It's absolutely the Best Made.

Price, 65 Cents per Can.

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The YANKEE Hot Air DAMPER (IMPROVED.)

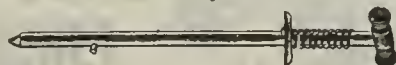
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THE YANKEE EXCELS.

SMOKE PIPE.



Above All—Cheapness—a dealer cannot possibly make dampers as cheaply as we sell the Yankee. Easily put in and taken out of pipes. Stiffest, quickest-working and neatest damper on the market.



It is impossible for this rod when in position to move either way.

ROD POINTS: Has wood enameled handle. Wood handle cannot come off. Washer and spring cannot fall off the rod. Same size of holes are punched on each side of pipe. Rod is made of 1/4 in. cold-rolled steel and slips into damper very smoothly. Sample sent to any Dealer without charge.



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Either bent or straight ends; length, 20 in.

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No. 3. Light pattern, coppered.
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Agents: MANNING, MAXWELL & MOORE, New York and Chicago.

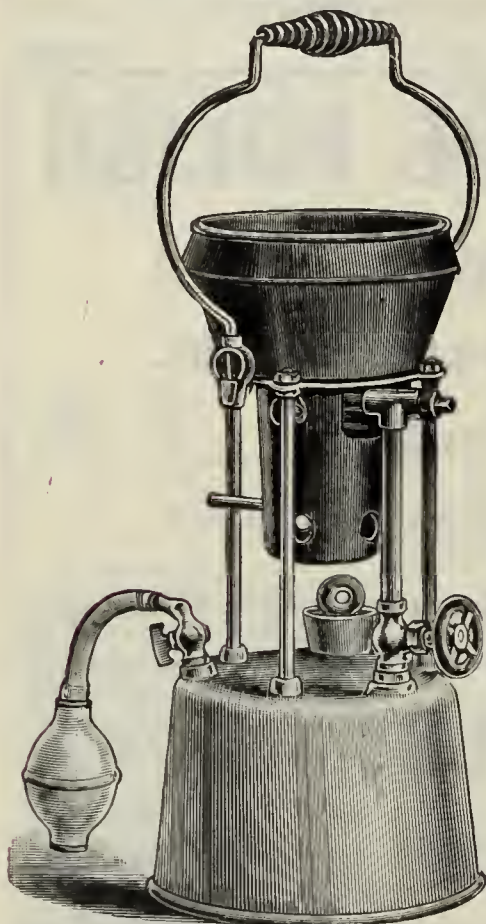
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In Ten Hours on
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WOLFF'S IMPROVED PLUMBERS' FURNACE.

The "DURO."



THE "DURO" "F" 1241.
PRICES UPON APPLICATION.

Quantity shipments are packed in cases 6 and 12 furnaces each.

The "DURO" Plumbers' Furnace

Has Drawn Steel Reservoir
Heavily Galvanized.

Drawn Steel Coil Cup.
Wrought Steel Bottom.
Patent Wire Handle.
Improved Filling Plug.
Safety Air Cock Joints.
No Cast-Iron Parts

It weighs less than any other Furnace now in use.
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Our Improved Plumbers' Furnace we have fully succeeded in producing the best furnace made. Most perfect in every detail. Of the highest efficiency. In operation, positive and reliable. Of substantial construction; combining lightness, strength and durability, at no more cost to the trade than the old style.

All component parts are interchangeable, being accurately made and fitted before shipment.

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ARE COMBINED.

IT Cleans Out

All obstructions by
FORCE OR SUCTION.

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\$4.50 NET.

that the most successful tradesmen employ up-to-date methods and have the latest improved tools designed especially for their needs, which enables them to do the best work for less money than those employing out-of-date tools and methods?

Try a No. 5 Fire Pot and be convinced that it pays to have a good one. It is warranted. Jobbers sell at factory price. Remember our name on a Fire Pot or Torch means your money back if not pleased.

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Galvanized range boilers,
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No. 1 threads $\frac{1}{4}$ to 1 in. pipe, takes 2 or $2\frac{1}{4}$ in. die, \$10.00.
No. 2 threads 1 to 2 in. pipe, takes $2\frac{1}{2}$, 3 and 4 in. die, \$17.00.
For sale by leading jobbers.

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STANDARD BURNER A TIP TOP TIP OUR OWN FACTORY

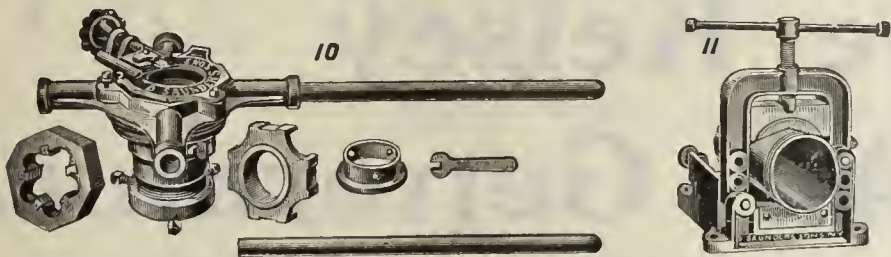
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CORRECT PRINCIPLES PERFECT COMBUSTION

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**DIE-STOCKS AND VISES**

FOR **LARGE PIPE**. These stocks have **CUTTING OFF ATTACHMENT**, and both Vises and Stocks are Malleable Iron. Light, strong and of superior design and finish; also **PIPE THREADING MACHINES** $\frac{1}{4}$ " to 18", Tapping Machines, &c.

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FORBES PATENT DIE STOCK

FOR HAND OR POWER.

Occupy less floor space, require less power to run, more simple of construction, far cheaper than any other machine of same range.

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NO DUST OR CHIPS

Can interfere with the work of

**ARMSTRONG'S GENUINE
PIPE THREADING MACHINES
(HAND OR POWER).**

Moving parts run in oil in covered chambers. For other strong points see catalogue.

ADJUSTABLE STOCKS AND DIES.

THE ARMSTRONG MFG. CO.

139 Centre St., N. Y. Bridgeport, Conn., U. S. A.

No. 0 Threading Machine, Power Attachment.

Anderson Lead Pipe Couplings.

Connecting lead to lead, lead to iron, block tin pipe, tin lined lead pipe.

The advantages of this joint over all present systems are: Absolute simplicity; no extra tools required.

Economy combined with strength. No solder required. Joint made while wet.

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OF ITS KIND ON THE MARKET.**

We are the largest makers of Air Valves in the world and sell direct to the dealers. Write at once for circulars and discounts.

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with

The "Zenith" Valve

Discharges contents instantaneously.

Wash from flush rim follows.

Churning entirely avoided.

Air forced through jet into soil pipe.

Emptied without removing (see drain screw).



Finest vitreous china ware.

Made in best possible manner

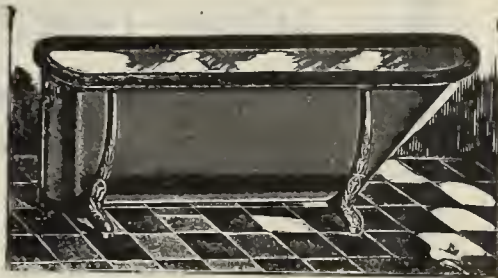
Of best materials obtainable.

Patent applied for. Write for Circular.

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Manufacturers of

Steel Enamel and Steel Glad
BATH TUBS and HEATERS.

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Everything You Want for Plumbing.

The Kelsey Warm Air Generator.

A HEATING APPARATUS with from nine to seventeen vertical corrugated cast iron flues, or Sections, forming the Fire Cylinder and Combustion Chamber, and having 65 square feet of heating surface to each square foot of grate surface.

Warms thoroughly and to the proper temperature great volumes of air, by passing it through the flues, and conveys it to every part of the building.

Provides heat and most perfect ventilation for Residences, Churches and School Buildings.

Accomplishes results which lead to further sales at satisfactory profits for the dealer.

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Tackle Boxes and Minnow Buckets

Are necessary requisites for a fishing trip. Your customers will call for them soon. We have them in all sizes and styles to supply your wants. Write any of our branch offices for prices and information.

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NEW YORK AND CHICAGO.

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CHICAGO.....1205 Fisher Building
CINCINNATI.....22-24 Pickering Building
ST. LOUIS.....1205 Chemical Building
CLEVELAND.....312 The Cuyahoga
LONDON.....Hastings House, Norfolk St., Strand

Volume LVIII.....No. 3
Index to Reading Matter.....Page 60

Correspondents Must Give Their Addresses.

We are always pleased to receive requests for information from our subscribers, and are willing not only to take great pains, but even to incur considerable expense, in preparing the answers to questions of a practical nature which may be referred to us. Not an issue of *The Metal Worker* appears which does not contain a number of answers given to inquiries which have been referred to us by our subscribers. We can, therefore, not be accused of slighting any of these requests which are made. It happens, however, that readers of *The Metal Worker* will occasionally send in a request for information without disclosing their names. It is extremely desirable for us to know who the parties are who send us inquiries. It is not for the purpose of publishing their names, but simply because it may be extremely important at some time for us to know from whom the question came. Sometimes we desire to conduct some additional correspondence with them. It is certainly a small matter for any one to give his name and address when he sends a question to *The Metal Worker* which may require considerable trouble and expense in preparing and publishing the information desired. This matter has recently grown in importance, as the number of unsigned communications we have received has been increasing. The past week, for instance, we have received a communication from Baltimore, asking who manufactures a certain heat governor; another from a town in New York, asking for the address of certain heating and ventilating contractors; another asking how to cut the miter patterns for a roll cap on a pitched roof, and another from Canada, asking a question regarding the amalgamation of certain trade unions. These questions would have received prompt attention if the writers had in each case given their addresses. As each issue of *The Metal Worker* contains a request to correspondents to give their names and addresses, we are obliged to refrain from answering these communications in our columns until the information which we desire is forwarded to us. If any of the writers of the above communications will comply with our very reasonable request, we shall be pleased to give their communications attention.

The Johnstown Mine Calamity.

The loss of life in the coal mine explosion at Johnstown, Pa., which occurred on the 10th inst., proves to have been considerably less than was at first estimated. This is something of a relief, as the earliest reports sent

out were of a character to make the disaster dreadfully reminiscent of the appalling loss of life by the flood of May 31, 1889, when that town was almost destroyed. Nevertheless, this fresh calamity will take rank among the most serious mine disasters, as according to latest advices the number of the dead is known to have been 112, and other victims may be discovered when the workings are completely explored. The cause of the catastrophe is stated to have been an explosion of fire damp in one of the Cambria Steel Company's coal mines, known as the Rolling Mill mine, in which a force of over 700 men were employed, producing about 2500 tons of coal daily. This mine was first opened in 1861 and has since been the best of the company's mines, furnishing much the greater part of their coal supply.

As usual when a disaster of this kind occurs, harsh criticism was immediately leveled at the Cambria Steel Company for not having taken proper precautions for the safety of the miners. It appears, however, that the strictures were not even remotely deserved, as the State mine inspectors have freely discussed the condition of the mine with press representatives, stating that they had always found it among the best over which they had supervision. Intimations are given that at the inquest, which is shortly to be held, the responsibility for the accident will be clearly shown to rest upon one of the miners, who probably violated the regulations adopted for the safety of himself and his fellows and perished as a result of his own carelessness. This contingency is always necessary to be borne in mind in passing judgment relative to a mining accident, especially an explosion of fire damp. The appliances for ventilation may be of the most elaborate character, and every conceivable care may be taken by the owners and engineers of a mine, only to be set at naught by some reckless or thoughtless miner, disposed to take chances of an accident, either to increase his output and his earnings or to avoid inconvenience to himself. It is most deplorable that such a miner cannot perish alone if he willfully violates regulations adopted for his own safety. But he never does. In this case not only were scores of his fellow miners swept out of existence, but heroic superintendents and foremen also lost their lives in endeavoring to rescue those who might be imprisoned in other workings. It will be many long years until the recollection of this great calamity is effaced from the memories of either those who were rescued or those who belong to the bereaved families.

Progress of the Workingman.

The most casual study of the labor question in this country must make it apparent that the status of the American workman has been steadily rising in the past half century and that his progress, in regard both to wages and hours of labor, has been remarkably rapid in the past few years. Fifty years ago a skilled mechanic earned from \$1.25 to \$1.75 a day, and the day's work usually lasted from sunrise to sunset. To-day the same class of workman earns from \$3 to \$4.50 a day and begins and ends his work at a fixed time, which is usually within the limits of eight or nine hours. It is true that the cost of living has materially increased in the

interval, but this increase is certainly not proportionate to the growth in wages. The twentieth century workman lives better, dresses better and has many more comforts and luxuries, with more time to enjoy them, than his predecessor in the middle of the last century. The wants of the workman to-day are certainly greater than they were in the early fifties, but that is because he has risen in the scale of life. Whether, under the strain of modern methods and the limitations of his labor unions, he is happier than the mechanic of fifty years ago is, as Kipling would say, "another story." It is a fact, however, that the workman, as a class, is rapidly nearing his ideal, an eight-hour day—eight hours' work, eight hours' leisure, and eight hours' sleep—with good wages to enable him and his to live comfortably and enjoy the ordinary pleasures of life. This is certainly not an unworthy ideal, and few will grudge the workman its attainment.

A Year's Foreign Commerce.

Considerable interest attaches to the record of the foreign commerce of the United States in the fiscal year just closed. The official figures of the Treasury Department which have been given out from month to month indicated that the year would show a material decline in the value of exports as compared with the fiscal year 1901. The preliminary figures, just published, show a drop of \$105,000,000 in the exports for the twelve months ended June 30, 1902, as compared with the exports for the fiscal year 1901, and a decline of \$12,000,000 as compared with the fiscal year 1900. This decline is attributed almost exclusively to the result of the drought of last year, the greatest reduction in foreign shipments of American products being in the item of corn, which fell from 177,000,000 bushels in the fiscal year 1901 to 27,000,000 bushels in the fiscal year just ended, while oat exports dropped in the same period from 37,000,000 bushels to 9,000,000 bushels. This made a difference of fully \$76,000,000 in the value of our grain exports in the past fiscal year. Moreover, the value of cotton exports declined \$24,000,000 below that of 1901. This, however, was caused entirely by the fall in the average price of that staple, for the quantity of cotton exported in 1902 was actually 160,000,000 pounds greater than in 1901. The third item of reduction in exports was in manufactures of iron and steel. The reason for the falling off in this department was the fact that the domestic demand was so great in the past twelve months that it fully absorbed the production, leaving little or no surplus for exportation. While the exports of 1902 are thus shown to have fallen off materially, the imports for the twelve months were the largest in our history, amounting to no less than \$902,911,308. The nearest approach to this sum was \$854,000,000 in 1891, which was caused by the change in the tariff laws that year. In only three other years have the imports exceeded \$800,000,000—namely, 1893, 1900 and 1901. This increase in importations is regarded as gratifying, in that it demonstrates unusually active conditions in our manufacturing industries, the increase being almost exclusively caused by a remarkable growth in the importations of manufacturers' materials, which also formed a larger percentage than ever before in the grand total of imports.

In the Furnace Market.

The conditions, so far as the cost of pig iron, wages and supplies are concerned, bearing on the product of those foundries which are most interesting to the read-

ers of *The Metal Worker* have been alluded to frequently in our columns within the past few months. In many lines of goods, and particularly in stoves, advances have already been made in all parts of the country. The manufacturers of hot air furnaces, however, have been slower to take the step of advancing their goods as the prevailing conditions would warrant. There is evidence, however, since July has come in, that furnace manufacturers are awakening to the position which they are in. It has been a common opinion that hot air furnaces of all grades have sold at prices that are too low, and that are by no means bringing in a suitable return for the energy expended and the capital invested in their manufacture and sale. Those interested in this branch of trade in the vicinity of New York, without calling a formal meeting, have utilized the lunch hour as casual meetings for the discussion of the advisability of getting more money for their goods. Several houses have independently advanced the price of their product, and a strong probability exists that their example will be quite generally followed before the fall season sets in. There also seems to be evidence of a realization of the fact that far too great a proportion of the cheap form of hot air furnaces is sold, and of the folly of the practice. These cheap furnaces not only bring in very little profit, but have the detrimental effect of supplying the demand, so that the better grades of furnaces, that pay a satisfactory profit, are largely cut off from sale. These cheap furnaces cannot naturally prove very economical or efficient, and they not only fail to stimulate a more general or popular demand for furnace heating, but through their unsatisfactory service they tend to cause buyers to seek some other form of heating apparatus. The sale of cheap furnaces, to the exclusion of a better grade of goods, has prevailed to a large extent in all sections of the country, and it is to be hoped that should the furnace trade generally find it advisable to advance their prices the discussions to that end be accompanied by suggestions for promoting the sale of more of the better class of goods and less of the cheap grades.

Dun's index number of prices of the leading staples, proportioned to consumption, was \$101.910 on July 1, against \$101.168 on June 1, and \$91.509 on July 1, 1901. Although the cost of living is higher now than at almost any earlier date, it shows a moderate decline as compared with the record of \$102.289 on May 1. This decline is attributed mainly to a decline of over 8 per cent. in the price of dairy products and garden truck. The high prices of corn and meats, however, to a large extent counteracted declines in other directions. Breadstuffs rose 6.7 per cent. in price during June, attaining the highest point covered by the record. In miscellaneous food products, outside of those mentioned, there was practically no change in the past month, while the fluctuations in other staples were insignificant. Comparing present prices with those of a year ago, the average advance is placed at 11 per cent., while breadstuffs are 38 per cent. higher, and meats 23 per cent., all of which means a material increase in the cost of living.

It is well known that the demand for cold drinking water is great in office buildings, and especially in those of New York City, where the heat at times during the summer is almost unbearable, owing not alone to the high temperature, but chiefly to the moisture in the atmosphere. In order to supply this demand the proprietors of the Atlantic Building during the summer installed an extensive water cooling plant. The machine is not intended to make ice, but merely to cool the water to about 38 to 40 degrees F. for drinking purposes.

A STOVE CAPTAIN NEEDED.

The following communication from a prominent stove manufacturer will undoubtedly be read with much interest by the trade:

When one who has been in the stove business all his life, knows its possibilities and opportunities and what it has done, reads the statement of President Charles M. Schwab of the United States Steel Corporation and sees that the expected profits for the coming year run up over \$140,000,000, he wonders where the stove business comes in. The stove industry is one of far greater usefulness than the manufacture of steel rails, structural steel and other products made by the United States Steel Corporation, for every family must cook to eat and must eat to live, whereas railroads do not have to be built, neither is it compulsory to erect buildings, or even if a building must be erected it need not be composed of steel frame construction. On the other hand, every wooden or brick house contains one or more of the products of a stove foundry; this, however, is not necessarily the case with the products of the United States Steel Corporation.

The concentrated product of the stove business, if it had a captain with the brains and backbone of Mr. Schwab, would show results which would astonish the old-fashioned stove manufacturer. The stove business is now principally run by the buyer and the Molders' Union. The poor devil of a manufacturer has little to do with it; he is only submitting to what he cannot help. The stove manufacturer does not control his iron, coke or coal, and only incidentally controls his bank account. If the stove business had a captain it would then control its iron, its coke and not only its bank account, but the Molders' Union as well, not to the detriment of any one but for the benefit of all. When nearly every other product made here is exported in large quantities, why cannot stoves be exported? It is true they are exported, but what a penny peanut business it is compared with almost any other line of equal importance.

The stove business needs a captain, and needs one quickly. It needs a captain who will gather the scattered soldiers who are all fighting on their own account, and fighting each other at that, and bring them into a harmonious company and march them on as one man, shoulder to shoulder, to the success that should come to hard and earnest workers. Where can the stove business find such a captain? Does any one know?

ANENT HARD KNOTS IN FURNACE HEATING.

BY O. H. R.

Having read the article entitled, "Some Hard Knots in Furnace Heating," in *The Metal Worker* of February 8, I should like to suggest that while the writer has shown good logic on most of the points he has touched, treating cause and effect from both the scientific and theoretical standpoints, he seems to have lost sight of the law of gravitation. In his illustration the cold air is made to take an upward course of circulation from the cold air face located near a window on the north side of the room at the outside wall, while the warm air register is located on the opposite side, or in the south part of the room. As indicated by the arrow points, the warmer air that should come from that opening may, of its inadequacy, be overcome or held in check, back pressured or air compressed, as he puts it, because of the density of the cold air as a counteracting force. I presume that when he states that the air "ducks heads," he means that it does not return to the furnace through the hot air pipe, but through the failure of a sufficient quantity of hot air to enter the room, and owing to the large amount of cold air in it, the temperature decreases in the room faster than the limited amount of warm air entering, owing to retarded circulation, can overcome. As to the air coming from the cold air exhaust, that would be contrary to the law of gravity. Because of its relative density it must fall. The cold air duct is a part of a positive circulating system, and to prove the point it is only necessary to ob-

serve the numerous cases where the cold air is taken directly from the outside of the building for the purpose of producing the best results.

At this particular writing the sun shines so brightly in favor of recuperative recreation from our many trials with the mass of ungrateful patrons of the furnace business, that it is very difficult to draw one's imagination into actually seeing atoms of hot air and cold air passing along through their respective channels, retracing, being retarded, back pressured, or air compressed, by these counteracting agents or forces of nature, as I understand to have been portrayed by "Old Rosinhead." I hope, however, that the discussion of this class of heating will be of benefit to those who, in the interest of the public at large, and of a more perfect and sanitary system of heating and ventilation, are exhausting every possible means to that end now known to them, and will, as a result of the united effort, supply what has been a long felt want—comfort, satisfaction and pure, warm air.

The Portsmouth Stove & Range Company.

Under the title of Catalogue No. 10 the Portsmouth Stove & Range Company, Portsmouth, Ohio, have issued an interesting publication of 138 pages, relating to their leading lines of steel and cast ranges, cook stoves and heaters. Careful attention has been given to the arrangement of the matter, which is neatly printed on pages with rounded corners and bound in colored paper covers with embossed side title. Among the early pages are to be found directions for setting up and operating stoves issued by the National Association of Stove Manufacturers, together with an illustrated description of some of the special features and advantages of a Model steel range over a cast range or a cook stove. This constitutes an interesting chapter, as the illustrations relate to the construction in detail of important features embodied in the range in question. The Model is made with either polished steel or japan finish, and is offered in a number of styles and sizes. In the catalogue is shown for the first time the company's new series of four-hole Model ranges, which are in harmony in general style and make-up with the six-hole series. They have the same steel fire box, nickel parts, closets, shelves and balanced oven door, but no pedal attachment for opening it. The new four-hole range is said to be particularly adapted for city use where floor space is usually at a premium.

Following the Model steel range, attention is given to a varied assortment of cast goods, including the Ideal, Regal, Perfect and Superb Queen ranges, adapted for using coal or wood as a fuel. The exterior is cleverly treated with cast ornamentation in combination with nickel parts, while the constructive features are of a modern type. Another style of decoration is used on the Northern and Southern Queen, Welcome, Domestic and Queen cook stoves. These, in turn, are followed by the Western Queen square oven ranges and stoves, which are of the same general style as the Ideal, but there is a difference in the construction of the fire box, which is made especially for burning wood. Various other lines of cooks are also illustrated.

Among the heating stoves, the leading place is given to the Model radiator for hard or soft coal. This is made both as a single or double heater and embodies features of construction which the company feel cannot fail to command the attention of the trade. The new Model oak is another handsome parlor heater, made in four sizes, and thoroughly up to date in all respects. A miscellaneous assortment of Franklin, cottage parlor, sheet iron surface burners, laundry, box and cannon stoves occupy the concluding pages of the catalogue, together with a description of the Mogul furnace and price-lists of jamb grates, hollow ware, sugar kettles, &c. A feature, which is now to be found in connection with stove catalogues of the leading manufacturers, is skeleton cuts of stoves showing the various parts numbered and referring to explanatory tables, with a view to facilitating the ordering of repairs by dealers and avoiding the annoying mistakes which are constantly arising in this branch of the business.

FOUNDRY COSTS.*

BY R. C. CUNNINGHAM, HOLYOKE, MASS.

At the last annual meeting of this association I presented a paper on "Foundry Costs." The ground I took at that time was that we were doing a large amount of work in our foundries which only increased our costs and did not increase our production, this unnecessary work being due to badly made and worn out patterns. The article was severely criticised by pattern makers and others in trade journals and by personal letters. One man went so far as to say that the principal reason that foundrymen were not consulted more in the construction of patterns was that very few could tell by looking at a drawing how a pattern should be made, and during his 25 years' experience as a pattern maker he had only met one foundryman who could read drawings intelligently. It was claimed that the paper had a tendency to create a bad feeling between foundrymen and pattern makers, and there would be constant wrangling as to how patterns should be made. I certainly had no intention of saying anything to belittle the pattern maker or to provoke discord in any shop. I made the statement at the time only in the interest of the foundrymen, and I feel to-day that I am backed by a large majority in what I said.

Shortly after the convention I had occasion to visit a prominent concern. In conversation with the manager he told me that he thought my paper would do good, and wanted me to go through his works and tell him just where he could save money. He further added, "I think we are about up to date, but am willing to learn." I went into his foundry, and in observing things my attention was attracted by a molder standing apparently waiting for something. While I was watching him the workman next to him passed him over his rammer. He took it and went to work. Upon investigating I found that these two molders had only one rammer, one shovel and one No. 4 riddle. Neither had a fine riddle, brush, pail or bellows, nor, in fact, any of the tools that are usually furnished by the company. They had quite a number of helpers in the shop. They did not give each of them a shovel. I spent the greater part of a day about the shop carefully observing the way the place was managed, and I think I am safe in saying that 10 per cent. of the men did not have proper tools to work with and depended on borrowing from the other men or upon what they pick up about the shop. As I was leaving, the manager called me into his office and inquired if I saw anything I would have different. I told him I thought there were some things that could be improved upon. He wanted to know what they were. I told him of the things I saw in the shop. He thanked me, and said: "I will look into it and I will write you." This happened about ten months ago. I had forgotten about it when a few weeks ago the following came to me:

You will remember spending a day at our works several months ago and of expressing yourself about how you found things in the foundry. The next day after you were here I went into the foundry to find out the truth of your statement, and I will have to admit you did not half tell it. I went into the foundry and stayed there over a week, and I will say candidly I do not see how the men could do as much work as they did. In a few days every man had his supply of tools, marked with his number. I stopped the molders waiting around in the morning. I had all their patterns and flasks on their floors by 7 o'clock. I have the flasks fitted before the job comes into the foundry. The molders work no harder than they did before, but we are turning out more castings and they are much better. Our expenses remain about the same, lower if anything, which shows a reduction in the costs. The statements you made in your paper before the American Foundrymen's Association last year were facts. Our foundries are neglected. We should pay the same attention to them that we do to our machine shops. I sincerely hope you will give us another paper on the same subject this year.

This letter comes from a man who thought his foundry was up to date, and I have no doubt that there are many more of the same mind. Now I wish that every foundryman present at this convention, when he returns to his own home, would go into the foundry and do as this man did, stay there a week or a month if necessary (It is a good healthy place to stay) and just take notice

of the patterns that come into the shop and see if the molders have the proper rigging.

See that there is no waiting for anything. Give your molders a chance and you will be surprised at the results. Now I wish every foundryman present to-day would try this, and at the end of three months write me the results; no matter what they are, I would like to know how you found things in your shops. Those of you who are about your shops daily have no doubt seen and corrected everything of this kind found there, but those of you who walk through your foundry only occasionally are the ones that I want to take this to heart and bear in mind that the little annoyances are where the time is lost. They may seem small in detail, but are large enough in the aggregate to increase the cost of your castings. The time when we can get more than a fair day's work from a man has gone by, and to-day every foundryman must keep close watch on his costs and production or he will find the balance on the wrong side of his ledger. In my opinion his only hope is to devise ways to do his work with more unskilled labor. By doing this he will not be dictated to, but will have a chance to get more benefit of his brain work than is now accorded to the employer of skilled labor.

There is one fact that we must not close our eyes to, and that is that the tendency of organized labor is to keep the production down to the lowest possible point, and at the same time increase the minimum rate of wages. Now with these cold facts staring us in the face we must watch very carefully and see that no work is done that we get no returns for. An hour or two spent on a badly made or worn out pattern means an increase in our cost, and does not increase our production, and in order to overcome this we must figure and scheme to have things so that the molder can turn out more work. An increase in our production without any increase in our cost is what we must aim for. To do this we must study every pattern, and if we can, by making changes, make a mold any quicker, we should not delay a single day in doing so.

I want to give you one illustration on this point: We have at our works a pattern for a 16-inch steam piston ring. During the past 25 years the company has made thousands of these rings. They were molded in the usual way. The pattern was made about 1 inch wider than the casting wanted, to be able to secure it on the face plate while turning. The ring is then cut off the desired width, and cut into four segments. The actual cost of labor on one set of these castings when they were ready to put into the cylinder was 75 cents. The casting in the rough weighed 23 pounds. The finished casting weighed 7½ pounds. The waste piece cut from the ring, that went into the scrap, weighed 6 pounds. Nine pounds went into turnings. I expended \$3.75 on a new pattern and plates, and am now putting these same castings into the erecting room for 4 cents a set. Besides the saving on the iron, I am saving 71 cents on labor on each set of castings. The company make probably 500 set of these rings a year, including the new work and repairs. The saving on this job alone amounts to three hundred and fifty odd dollars. A half dozen jobs like this would pay the salary for a good man for one year.

I do not claim that every job can be put on a machine on plates and the same results obtained, but even if we can get an increase in our production of 25 per cent. without any increase in our expenses, it is certainly worth trying for. Our company have put on plates during the past year over 200 different patterns, and on none of them have we made anything less than 50 per cent. saving. Any foundryman is welcome to come and inspect our patterns. We have no secrets about our shop. What we have learned by experience we are willing you should profit by if you wish.

An amusing incident happened at our works a short time ago. A foundryman was visiting our shop and I was showing him this same pattern which I have mentioned here. After looking it over carefully, he said: "It is a very fine idea, but I fail to see where you get any credit for it. According to your own statement you have cut down your production about two-thirds. Now, unless your firm do differently from any other you

* Paper read at the meeting of the American Foundrymen's Association, Boston, June, 1902.

only get credit for what castings you turn out; where you formerly got credit for 23 pounds of castings, now you only get credit for 7½ pounds. It looks to me as if you were helping the machine shop at the expense of the foundry." I told him I was working for a firm that gave credit where it was due, and I think that every company should let their men understand that any improvements gotten up to reduce the costs or increase the production would be liberally paid for. It should be the aim of every foreman to encourage this among his men, particularly among the younger class. There is nothing that encourages a young man as much as it does to ask his opinion. We must remember that from among the young men we are to find our future foundry managers, and when they take the burden from our shoulders let us have the satisfaction of feeling that we exercised our ability to its fullest extent in filling up those dangerous pitfalls and removing as far as possible the stumbling blocks from their paths.

The Standard Hot Air Furnaces.

Furnacemen will be interested in the publications relating to the Standard furnaces and combination heaters issued by Giblin & Co., Utica, N. Y. One catalogue is devoted to useful information, ratings, and price-lists, while the other shows by means of general and broken views the construction of the various styles of the Standard all cast iron and steel drum furnaces manufactured by the house. Illustrations are also given showing the water heaters made by the concern and their application to the various Standard constructions. One page shows the construction which can be adapted to all of the Standard furnaces for the use of natural gas fuel. Broken views in the back part of the catalogue make the construction of both the Standard steel radiator and the Standard all cast iron radiator, and the travel of the products of combustion through them, readily understood. These heaters are made in a variety of sizes, and in the Rival Junior and Standard furnace apparatus is provided adapted to the requirements of all classes of tradesmen, those who do competitive building work as well as those who confine their efforts to the installation of different forms of hot air furnace heating systems.

The Faultless Ranges.

The Graff Furnace Company, 208 Water street, New York, have just issued a 28-page catalogue in a brown cover, with the name and address of the house on the front in a design in gold bronze. This catalogue is devoted to their Faultless ranges and fire place heaters. At the outset attention is called to the great variety of Faultless and Hero warm air furnaces, steam and hot water boilers, also made by the house. The first place in the catalogue is given to the Faultless brick set double oven range, following which is the Faultless portable double oven range. These ranges are of neat design, provided with a fire chamber of ample capacity, equipped with labor saving grates, sifter grates and ash pans. They have four cooking holes directly over the fire, and the flue construction is such as to maintain an even temperature in both ovens. The Columbia range differs from the Faultless in design and in having but two holes over the fire. These ranges are especially designed for fine residences. The Faultless single oven ranges are made in a variety of styles and sizes, with both right and left hand ovens, and adapted for vertical or horizontal boilers. They are equipped with high shelves, warming closets and sifter grates.

The company have recently brought out a new high gas oven and broiler, applicable to any single oven range. This gas attachment is arranged with a three-burner hot plate, which can be raised up out of the way under the gas oven or dropped down on the top of the range for use, as desired. The Hero is a smaller range, made to meet the requirements of the building trade. The Elegant fire place heater is of the base burner type, having a large illumination and equipped with a labor saving grate. The construction is such that the flues may be cleaned without removing the heater from its

setting. It has a large heating capacity, and is so constructed that the air supply for heating the upper rooms may be either taken from out of doors or from the room in which it is placed. The Ideal Franklin fire place heater is said to embody all the requisites of a satisfactory heater and of an open grate fire, having a large mica illumination and sliding blower doors so that the front can be thrown entirely open or partly open at pleasure. It is made with three styles of frames, either square, circular or of French pattern.

The International Furnaces.

Those interested in furnace heating will derive advantage from securing the latest literature issued by the International Heater Company, Utica, N. Y. New pamphlets recently sent to *The Metal Worker* are devoted to the Wheeler Palace line and the Pease Economy line. The Palace line opens with the Palace Queen hot air furnace, which is of tubular steel construction. This is followed by the Palace King, having a steel radiator of the return flue type, and also a cast iron radiator of the same construction, the cast iron radiator being cast in one piece. The Palace Regent is constructed with a large combustion chamber, the outlet from which is into an annular drum, affording a large surface for heating air. These heaters are also shown with gas burning devices and water heating apparatus for combination heating. Two pages are devoted to the illustration and explanation of a new wood furnace.

The catalogue of the Pease Economy line opens with a broken view of the Pease steam and air combination heater, showing both the regular style and the low down construction. These heaters are also presented as water and air combination heaters, and as air heaters only. The Tropic heater, which is a cheaper construction, as well as the Pease, is designed for using both hard and soft coal. Both of these lines are made in a variety of sizes adapted for heating either residences or public buildings.

A Canadian Stove Catalogue.

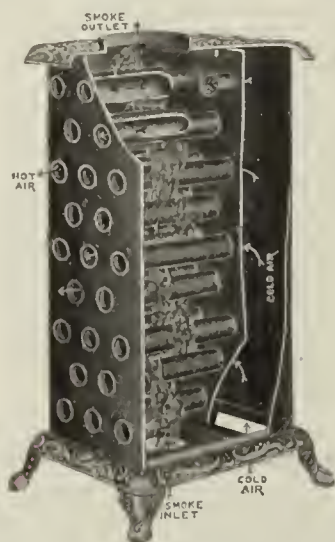
The McClary Mfg. Company, London, Canada, have just issued from the press a substantially bound catalogue of 198 pages, illustrating various lines of stoves, ranges, heaters, &c., which they are offering in extensive variety. In the opening pages are directions for ordering goods, together with some comments which afford an idea of the volume of the company's business and the magnitude of their works. The leading place among the ranges is given to the Cornwall, a steel construction made with four or six cooking holes in the top surface, according to requirements, and adapted for using coal, coke or wood. This range is shown in several varieties, all of which are treated exteriorly in a way to attract the eye. Another member of this class is the Kootenay, which, while constructed on the same general lines as the Cornwall, is offered at a less price. The Army is a heavy steel plate range, made in sizes ranging from one to 12 boiler holes in the top surface, and is therefore especially constructed for hotels, restaurants, boarding houses, clubs, public and private institutions, and in fact all places where cooking operations for a large number of people are necessary.

Following the steel ranges attention is given to cast goods, which are shown with the Famous Active range in the leading place. This is followed by the Kitchener ranges and Kitchener cook, the Famous Model range and cook stove, the Maryboro cook for wood only, together with an extensive assortment of goods of cheaper construction. The leading parlor heater is the Famous base burner, made in two sizes with and three sizes without oven. The Famous hot blast heater, the Belle Oak, the Yukon triple heater, being in effect a handsome Todd stove, the Beechwood, a neat box stove for wood only, and a varied assortment of Famous air tight heaters, laundry stoves, &c., follow. Brief attention is given to the Famous gas range and hot plates, also to many varieties of camp stoves, which are in special demand in the northern sections of the continent. In the way of furnaces the catalogue shows the Sun-

shine, the Famous Florida, the Famous Eclipse, the Comet and the Famous Magnet. An assortment of miscellaneous goods, including registers, hollow ware, &c., occupy the concluding pages. Not the least important feature is a table showing the approximate weight of repairs in pounds for wood stoves, also for coal and wood stoves, and the approximate weights of fire pots and grates. A telegraphic code completes the volume.

The Independent Stove Pipe Radiator.

We present herewith a broken view showing the internal construction of what is known as the Independent stove pipe radiator, which is being manufactured by the Independent Register Company, 154-158 Champlain street, Cleveland, Ohio. The steel shell is filled with radiating tubes $1\frac{1}{2}$ inches in diameter and from $7\frac{1}{2}$ to $8\frac{1}{2}$ inches long, according to the size of the radiator. These tubes pass from the back to the front of the smoke chamber and are open at both ends. In the rear of the smoke chamber is an air shaft, closed at the top and open at the bottom, which draws the air from the floor, where it is always coolest, and feeds it to the radiating tubes. The company point out that the con-



The Independent Stove Pipe Radiator.

struction is such that in their passage to the chimney the products of combustion pass over these tubes with their large radiating surface, thus utilizing to the fullest extent an immense amount of heat which would otherwise escape by means of the smoke flue. This arrangement also makes each tube a separate radiator and the air passing through is raised to a high temperature, which is maintained as long as there is any fire in the stove. At the same time it causes a moderate circulation throughout every part of the room, tending to maintain a uniform temperature.

This stove pipe radiator is adapted for use in connection with any fuel, except soft coal. Some sizes are made with nickel plated tops, bases and legs and with body of American Russia iron, while other sizes have a body of cold rolled steel and aluminum finish tops, bases and legs. The radiator is of such a style and finish that it can be used in any room on the second floor and will keep it at a comfortable temperature by utilizing heat which would otherwise be lost up the chimney. The company have issued a little folder, illustrating and describing the radiator, and at the same time showing the manner of its application. The makers have also recently sent out an advertising novelty in the shape of an imitation pocket book, upon opening which is revealed a broken view of the radiator accompanied by reference to some of the claims made for it.

CAREY A. MOORE, the Acorn enthusiast, who represents Rathbone, Sard & Co., Albany, N. Y., in the South, with headquarters in Baltimore, visited the iron ore fields back of Duluth while on his vacation, and was much impressed with the methods of doing big things unassumingly in that center of activity.

STOVE FOUNDERS' AND METAL WORKERS' AGREEMENT.

Representatives of the Stove Founders' National Defense Association, in conference at Chicago with representatives of the Metal Polishers', Buffers' and Platers' Union, have drawn up an agreement which puts the two organizations on substantially the same footing on which the Stove Founders' and the Iron Molders' Union have been for many years. Those present at the conference on behalf of the Stove Founders' National Defense Association were: C. H. Castle, Quincy, Ill.; Henry Cribben, Chicago; D. S. Prizer, Reading, Pa.; Jeremiah Dwyer, Detroit, and D. McAfee, Quincy, Ill. The officers of the union, particularly President E. J. Lynch, have been agitating the proposal for an agreement for the past two years. The following is the text of the document drawn up at Chicago and signed by the representatives of the two organizations:

With the view of promoting harmony between the members composing the Stove Founders' National Defense Association and the Metal Polishers', Buffers' and Platers' Union in all matters affecting their joint interests, and providing the means for adjusting the grievances that may arise, we hereby signify our desire to adopt the principle of conciliation and arbitration upon equitable lines in such form and manner as may be hereafter mutually agreed upon, and we recommend as follows:

1. That a Conference Committee be formed, consisting of six members, three of whom shall be appointed by each organization to hold office for one year or until their successors are appointed.

2. Whenever there is a dispute between a member of the S. F. N. D. A. and the members of the M. P., B. and P. U., when a majority of the latter [the employees] are members of said union, and it cannot be settled amicably between them, it shall be referred to the presidents of the two associations before named, who shall themselves, or by delegates, give it due consideration. If they cannot decide it satisfactorily to themselves, they may, by mutual agreement, summon the Conference Committee, to whom the dispute shall be referred, and whose decision by a majority vote shall be final and binding upon each party for the term of 12 months. Pending adjudication by the presidents and Conference Committee, neither party to the dispute shall discontinue operations, but shall proceed with business in the ordinary manner. In case of a vacancy in the Committee of Conference it shall be filled by the association originally nominating. No vote shall be taken except by a full committee or by an even number of each party.

ODD PLATES.

THE PEERLESS STOVE & RANGE COMPANY of 44 West Naghten street, Columbus, Ohio, describe some of their leading Gas Heaters in a neatly printed pamphlet of 16 pages which they have issued. Prominent among the goods is the Triple Action, intended for using natural gas as a fuel. It is a closed Base Heater, the interior construction consisting of a system of 3-inch tubes open at the Stove bottom and extending to the main top. The cold air in passing through these tubes becomes highly heated and is discharged into the room through a fancy open work top plate. There are four horizontal plates, so arranged as to make the gas and hot air travel back and forth through four chambers until the burnt gas escapes into a flue, while the hot air passes into the room. The burner is cast iron and will not "flask back." The body of the Stove is of planished iron with rounded back corners. The Peerless Queen is another closed front Heater for natural gas and very much resembles a fireplace in appearance. The Juniata, for natural gas, is of the radiator type, having 6-inch planished iron tubes with cast base. Another novelty is the Florida, which is offered as a Double Heater, having an open front and using natural gas as a fuel.

THE MISKIMEN FURNACE COMPANY of Logansport, Ind., were recently organized with a capital of \$50,000 to manufacture Furnaces and Heating Appliances. The officers include George W. Miskimen, president; H. J. Crismond, vice-president; G. W. Walters, treasurer, and H. T. Tomlinson, secretary.

THE NONPAREIL GAS STOVE COMPANY of Chicago, Ill., have been incorporated with a capital of \$2500 for the

purpose of manufacturing Gas Stoves. The incorporators are W. F. Nichols, W. E. Mathews and L. R. Koretz.

At a recent meeting of the directors of the Reading Stove Works, Orr, Painter & Co., proprietors, Reading, Pa., it was decided to issue preferred stock for the purpose of making needed improvements to the plant and to extend the business. We understand that the stockholders recently decided to create a voting trust which will control the management of the business for a period of five years, the trust to be composed of five members. The company are doing a very large business, and the prospects for a heavy fall trade are exceedingly bright.

The new standard price-list on Mica, just issued by Eugene Munsell & Co., 218 Water street, New York, will be of interest to the Stove trade. The company carry a complete stock of all sizes of selected North Carolina and Wyoming Mica, and they call particular attention to their assorted packages, put up expressly for the retail trade. These packages are of 1, 2 and 3 pounds, containing respectively 4, 8 and 12 sizes of Sheet Mica.

KRAMER BROTHERS, Dayton, Ohio, are calling special attention, by means of an illustrated leaflet, to their Gem Stove Pipe Damper. This device is made with a long and sharp pointed spindle and is provided with a nickel plated handle of attractive appearance. These Dampers are made in 3, 3½, 4, 4½, 5, 5½, 6, 7, 8, 9 and 10 inch sizes.

THE F. MEYER & BROS. COMPANY, Peoria, Ill., manufacturers of the Handy Furnace Pipe, have let the contract for rebuilding the part of their plant which was recently burned. Three motors will be all the new machinery required, and these have been purchased.

THE AMERICAN VAPOR STOVE COMPANY are breaking ground for a large brick addition to the Dangler Stove factory in Cleveland, Ohio.

The first Stove made at the works of the Hanks Foundry Company, Rome, Ga., was turned out the first week of July and was placed on exhibition at the Hanks furniture store.

THE MONARCH STOVE & MFG. COMPANY division of the American Stove Company, Mansfield, Ohio, have just issued a new 36-page catalogue of Monarch Gas Heaters and Ovens, Hot Plates and Water Heaters, a line which has just been completed for the fall trade. Their salesmen are already in the field and at this early stage of the campaign are booking a very satisfactory amount of orders for these goods.

THE WEST SHORE STOVE COMPANY of New York have recently been incorporated with a capital of \$1,000,000. The directors include C. C. Bean, J. B. Conkling and Albert Schmid, all of New York City.

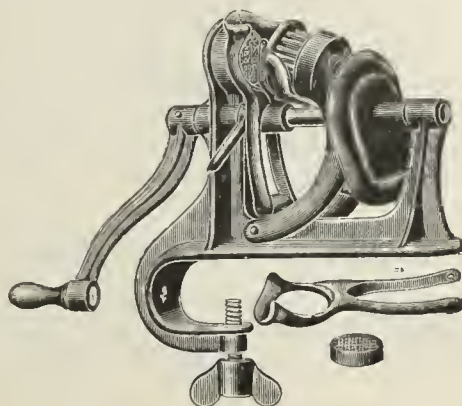
THE TOWNLEY STOVE COMPANY, Terre Haute, Ind., have recently gotten out a new line of stationery in the form of billheads, lease notes, receipts, statements, &c. on the back of each of which is a liberal display of advertising matter relating to the leading lines which they handle. By this means the company keep their goods constantly before the trade and make their stationery serve a double purpose.

Marvel Nutmeg Grater.

Franklin Specialty Company, 627-631 Franklin street, Reading, Pa., are manufacturing the Marvel nutmeg grater, which is so made that a whole nutmeg can be placed in a suitable pocket or receptacle and by pressure of a round wire spring, parallel with the cast iron handle, about 8 inches long, the nut is forced automatically against a perforated disk grater about 2¾ inches in diameter, which by means of a cast iron handle is revolved with the remaining hand. The advantage of this construction is that the nutmeg is kept in place, always ready, and can be used up entirely without necessitating any contact of the fingers either against the nut or the grating surface. The entire surface, which is of iron, is tinned. This company also manufacture a full line of 10-cent goods in the way of hardware specialties, including cast iron hammers, towel racks, clothes line hooks and goods of kindred character.

American Wonder Raisin Seeder.

George Borgfeldt & Co., West Third, Fourth and Wooster streets, New York, are introducing the American Wonder raisin seed extractor, for family use, as here illustrated. In operation raisins to be seeded, after being moistened, are fed into the upper left hand aperture, when a turn of the crank forces a series of small gauge nicked steel pins, covering a ¾-inch circle, through the fruit and against a rubber cushion perforated to receive the pins, thus pushing the seeds out. The various steel working parts, which are all nicked and polished, are automatically controlled by the irregular shaped stamped steel cam or plate, ridged on the

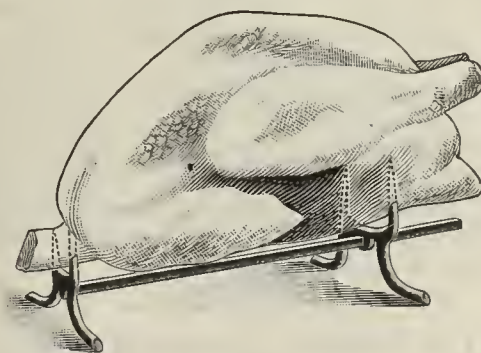


American Wonder Raisin Seeder.

inner side and secured to the crank shaft, by means of which the pins are thrown forward and withdrawn, at the same time two steel arms set at different angles wiping away at the proper time both the seeded berry and the seeds. The action of this machine leaves a raisin seedless, but does not mangle or mutilate it, the subsequent cooking process swelling the raisin to its original form before curing. It is a high grade article, the standard being black japanned. It is 6¾ inches long from front of crank to back of standard, about 5 inches high, not including the screw, has a 1¼-inch opening for clamping to table or shelf and weighs 18 ounces.

Roasting and Carving Rack.

The accompanying cut represents a rack on which to roast and carve meat or poultry, offered by A. E. Faber, Jr., 355 Mulberry street, Newark, N. J. It consists of a 10-inch square metal rod, upon which is one stationary and one adjustable rest, the latter sliding on the rod to accommodate the length of the roast. After the meat



Roasting and Carving Rack.

has been roasted the rack and meat are lifted together and placed on a platter. Among other points of excellence the manufacturers allude to the following: That the use of the rack admits of perfect roasting in all parts; that when placed on the platter carving is done with ease and comfort, the roast being held firmly, allowing the use of the fork to hold and distribute the pieces cut off; that the rack firmly secures the roast in a desirable position and provides space under and about the meat for gravy or decoration.

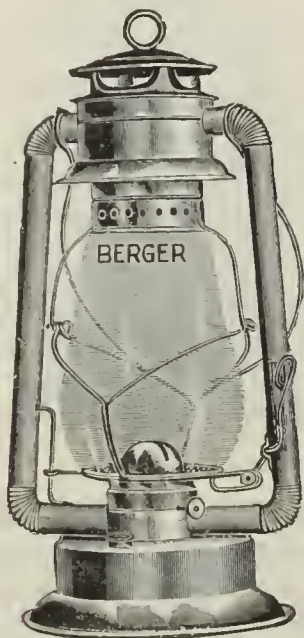
GLEN RIDGE, N. J., will issue \$8000 worth of bonds for making additions to the heating and ventilating plants in the public schools.

Fishermen's Equipment.

It is the season when those who handle sporting goods and cater to the trade of fishermen will do well to consult Catalogue No. 1 of the National Enameling & Stamping Company of New York City. One of its features is the variety of fishing tackle boxes, made in three different sizes and arranged with trays to lift out, divided into compartments for fish hooks, snoods, flies and artificial bait. The space below the trays is amply large enough for carrying reels, sinkers and lines suited for different kinds of fishing. Minnow buckets, another specialty in this line, are made in different styles and several sizes, some with perforated tin insets and some with woven wire insets. Care has been taken to construct these buckets so that there are no sharp corners to interfere with the movements of the minnows or injure them. The construction of some of these goods is such that they can be used either as floating or sunken buckets to keep the bait alive. The goods are neatly finished in attractive colors.

Side Lift Cold Blast Lantern.

The Berger Mfg. Company, Canton, Ohio, have just added to their line of lanterns the new Side Lift Cold Blast No. 2, shown in the accompanying engraving. The



Side Lift Cold Blast Lantern.

manufacturers claim this to be a distinct advance in lanterns and describe it as throwing a stream of clear, white, smokeless light, resulting from a perfect combustion, "which the fiercest gales cannot blow or the 'fiercest' roads jolt out." A side lift for the globe makes it convenient to light. It is strongly made of the best materials and is light to handle withal. The lantern is provided with a No. 2 burner, a 1-inch wick and a Cold Blast globe. They are furnished packed in cases of half a dozen.

The Tokheim Measuring Pump.

The Tokheim Mfg. Company, Cedar Rapids, Iowa, are offering the oil and gasoline measuring pump shown herewith. The pump, illustrated in Fig. 1, can be set in any convenient location in the store, as it is not necessary to set the pump on the tank nor directly over the tank in the basement, as it will draw oil. It is explained, 1000 feet from any angle if desired. This allows the merchant to place the oil tank underground at a fire proof distance from the building, where the oil supply is out of the frost in winter and out of the sun in summer and always convenient for filling. The pump is all metal and is referred to as being fume and vapor tight. The tank is supplied with a float indicator, also a 1 1/4-inch shut off valve on the supply pipe, so that in case of fire in the store the valve can be closed to protect against explosion and burning of the oil. The spe-

cial feature of the pump is the dome shown in Fig. 2. This is made of heavy flint glass, hand engraved, and, it is stated, measures a gallon or part of a gallon, United States standard, correctly. The manufacturers explain that it computes a gallon or any fraction of a gallon, from 1 cent's worth up, at any price, money value, in plain sight of the merchant and the customer. The pump does not depend upon the cylinder for the meas-

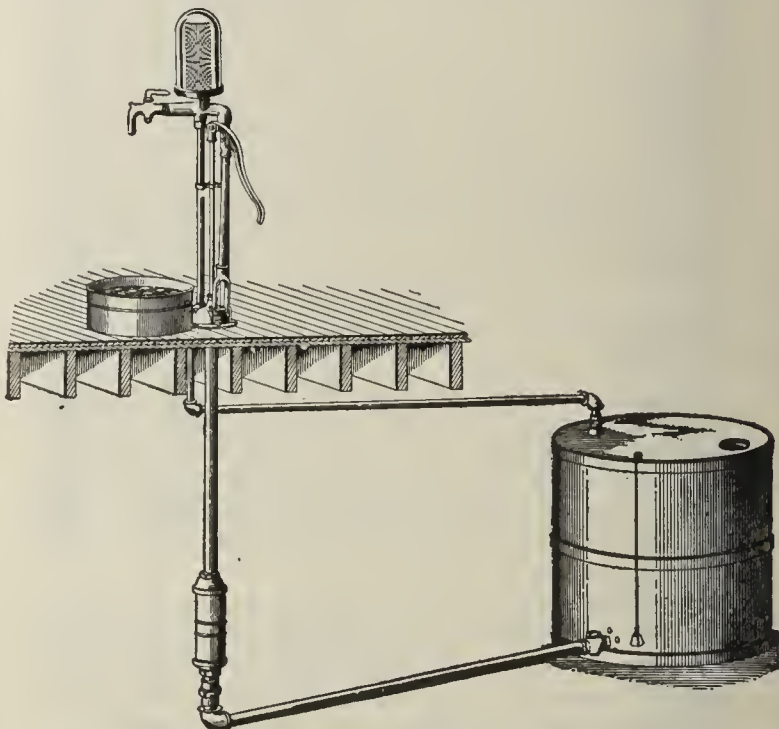


Fig. 1.—The Tokheim Measuring Pump.

urement and therefore, it is remarked, can be operated more easily than if a tight packing was required on the plunger in the cylinder; also that the wear on the cylinder has no effect on the measurement. The company

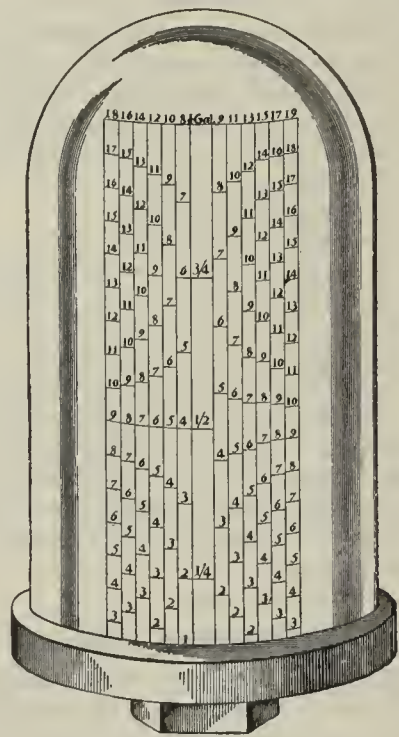


Fig. 2.—The Glass Dome.

make a specialty of extra heavy steel oil tanks for underground purposes, rust proof outside. The point is made that the foregoing device for handling oils and gasoline is highly recommended by insurance companies and city fire departments.

F. L. HELMES COMPANY have succeeded the late W. P. Kyle in the Hardware, Stove, Crockery and Tin Roofing business in Orlando, Fla. The new proprietors have remodeled the store and increased the stock and will be pleased to receive catalogues and other printed matter relating to the above lines.

Keeping Track of Contracts and Jobs.

J. W. Cooney, plumbing contractor, 355 West Twenty-sixth street, New York, has in use the system herewith described for keeping track of plumbing contracts and jobbing.

SHEETS AND BOOKS.

In addition to a journal and ledger, the following sheets and books are used in the system: Estimate sheets, foremen's orders for material from shop, ma-

ten across one end, and it is filed in alphabetical order with other estimates.

FOREMEN'S ORDERS.

Foremen are supplied with slips of plain ruled paper upon which to write orders for material required on contracts, to be filled from the shop. An order of this kind is shown in Fig. 2. A large stock of material is carried

Estimate No. 2748	Owner Geo. Black
12/2/01 189	Location 70.0 Irving Place
Elevation 10.0 feet	Builder Jones & Downing
Depth 20.5 feet	Architect H. Morse

8					
7	20 ft. cast iron pipe				
6	00				4.50 -
5	00				
4	00				
3	00				
2	00				
1					
Fittings					1.50
Caulking Lead	70	Charcoal	8		78
Oakum	9	Hooks	35		44
Permits					50
Supplies	pipes & fittings, top				93
Valves					1.04
Water	1-2"				50
Filter					3.00
Brasswork	Pipe	Sol. nipples	Ferrules		70
I. Traps					20
Lead pipe					50
Roofing		Materials			1.40
Finishing					48
Pipe cov'g					6
Sheet Lead					3.40
Marble		Square feet			80
Slate					45
Alberine					120 -
Solder	2	Roof Electric			2.00 -
Tanks					
Pump					30
Heaters					50
Gratings					
Boilers					
Cleanouts					
Indicators					
Hose		Brackets	Nozzles	10 sets @ 25	2.50
Casfiting					2.00
15 Mats	Water Closets				
10 Standard	Baths 5 1/2"				
10 6w. Lin	Basins				
8 Newport	Urinals				0.00
3 Mats	Wash Tubs				
	Sinks				
	Slop Sinks				
	Pantry Sinks				
	Trunks				
	Stable Fixtures				
	Total number Fixtures	46			
	Time	00	Weeks	@ 0	0.00
	Excavating				30
	Freight				3
	Amount				0.00
	Percentage				0.00
	Total				0.00

Estimated by C. K. & P.

Estimated for Jones & Downing

J. W. COONEY.

355 W. 26TH STREET.

Keeping Track of Contracts and Jobs.—Fig. 1.—Estimate Sheet, Actual Size 7 3/4 x 17 1/2 Inches.

terial book, orders on material houses, invoice book, time sheets, time roll book, contract account book and charge sheets.

ESTIMATE SHEET.

A reproduction of the estimate sheet is shown reduced in Fig. 1. This sheet is of manila stock paper, 7 3/4 x 17 1/2 inches in size. At the head of the sheet are provisions for full information regarding the building, name of the owner, builder and architect. Estimating the cost of a contract is done on this sheet, the printed form, in a measure, obviating the danger of omitting materials which would be required. The articles printed on the sheet usually fill all requirements, but if not names of additional material are written on some of the unused lines. When the estimate is completed the sheet is folded, the name and number of the estimate is writ-

man's order. All material returned from the job is credited on this book.

ORDERS ON MATERIAL HOUSES.

A reproduction is shown in Fig. 4, reduced, of an order on a material house. These are bound three to a page and are perforated, so as to be readily detached. Alternating with the pages of orders are pages for duplicates, of colored paper, on which carbon copies are taken and kept in the shop. It will be noticed that a request is made that the order number be put on the invoice. At the bottom of the order is a memorandum indicating to which contract the material is to be charged. When the invoice is received it is checked up

Dec 5
Send at once
3749 Broadway
x 6 lbs 5" S. H. pipe
✓ 50 lbs balk lead
✓ 3 pots
✓ 3 furnaces
✓ 4 bags coal
David Crane

Fig. 2.—Foremen's Orders.

at the shop, and it is not often that articles have to be ordered for contracts from material houses. The items checked in Fig. 2 indicate that they were obtained from the shop, while the X shows that an order had to be made for that item. The location of the job is given at the top of the order, and the foreman signs his name at the bottom. Upon arriving at the shop the helper gets out the material called for on the order, under the supervision of the bookkeeper, who checks the items.

MATERIAL BOOK.

One or more pages in the material book are given to each contract, as judgment suggests. In this book, a portion of a page of which is shown in Fig. 3, a record is kept of all the material that left the shop on the fore-

Park Co. Hotel	
December	
31	
4	Old Metals 30-
100# lead 4.50	Lead pipe 40-
3 balks Oakum 9-	Fittings 78-
Galv. pipe 25-	
Lead pipe 75-	
Cast iron pipe 300-	
413.50	
Del 413.50	
Ret. 148.50	
265.00	

Fig. 3.—Material Book.

with the carbon copy of the order and with the shipping receipt. When the invoice is checked "delivered" is written on the carbon copy of the order in the book. When looking over the book any orders not having the

Send invoice by mail, on which NUMBER OF ORDER MUST BE STATED
NOT RESPONSIBLE FOR GOODS DELIVERED WITHOUT A PRINTED ORDER

J. W. COONEY,
PLUMBING CONTRACTOR,
345 W. 28TH STREET,
TELEPHONE CALL 1298 1874

2250 New York 4/9 1901
Thomas Juppel
Please deliver to 2 W 81 St.
5 lbs 5" en by pipe
and charge to account of J. W. COONEY, per Kp
2 W 81 St

Fig. 4.—Order on Material House.

word "delivered" on them are made the subject of inquiry.

TIME SHEETS.

A reproduction of a time sheet is shown in Fig. 5, reduced. This is of manila stock paper, 9 $\frac{3}{4}$ x 12 inches in

FILL THIS TIME SHEET UP DAILY, AND NOT AT THE END OF THE WEEK.
J. W. COONEY, 345 WEST 28TH STREET, NEW YORK.

Time Sheet of *John Doe* and *Arch Roe* Helper, for week ending *12/6* 1901
Approved by *A. Crane*

WRITE DOWN minutely THE DESCRIPTION OF WORK DONE EACH DAY, WHAT FLOOR OF BUILDING, AND WHAT PRICE OF WORK ENGAGED ON.

DATE	STATE EXPLICITLY OF WHAT DONE AND OF WHAT MATERIALS AND WHAT	Amount	Amount	Amount	Amount	Amount	Amount	Amount	Amount
Saturday	No. 2 W 81 Repair to w.c. fixture	8	8						10.7
Friday	36 th St. On boiler line E	8	8						
Thursday	Apartment house								
Wednesday									
Tuesday									
Monday									
Sunday									

8 Hours constitutes a week's work for workmen and 16 hours for helpers, which make Friday night. This day must reach the shop Friday evening, fully made up, otherwise no wages will be paid.

Fig. 5.—Time Sheet, Actual Size 9 $\frac{3}{4}$ x 12 Inches.

size. The sheets are turned into the office every Friday evening, so as to allow the making up of the pay roll for Saturday, when the workmen receive their pay for the past six days. Explicit directions are printed on the time sheets regarding the record of each day's work, the

Time for Week ending *Dec. 13* 1901

NAMES	S	M	T	W	T	F	S	Total Time	Rate per day	Amount	Amount Paid	Balance
D. Crane	8	8	8	8	8	8	8	6.0	5.30	25	20.35	48.54
H. Black	8	8	8	8	8	8	8	6.0	4.24	1	25	24.54
F. Smith	8	8	8	8	8	8	8	6.0	3.25	22	50	48.54
G. Doe	8	8	8	8	8	8	8	6.0	3.25	10	22	24.54
W. Bowling	8	8	8	8	8	8	8	6.0	1.6	6	1	48.54
A. Duff	8	8	8	8	8	8	8	6.0	1.6	6	1	24.54

Fig. 6.—Time Roll Book.

time constituting a week's work, and the time that the time sheets must reach the shop. Before the sheets are sent to the office they are approved by the foremen.

TIME ROLL BOOK.

The time roll book, a portion of a page of which is illustrated in Fig. 6, is made up from the time sheets each Saturday. The location of the contract on which

February 1901

	1901	40	10	4	Bray	Expense	1	Mad	2	W	8	Labor
500	-	Mott	2	500.								
20		Crane	6	8				20.				
48	30	Writing	60									48.30
2		Huber					2.00					
90		Crane								90.		
660	30			500.		2.00	20.	90.				48.30

Fig. 7.—Invoice Book.

the work was done is placed after the name of each workman. The names are always entered on the time roll book in the following order: Foremen, workmen, helpers and then the office force. The wages for the

week are footed up and the amount necessary to make the payments is drawn from the bank.

INVOICE BOOK.

A portion of a page of the invoice book is illustrated in Fig. 7, reduced. As invoices for material are received from material houses they are immediately checked and entered on this book. The book is ruled so that each invoice can be charged to the contract for which the material is used. A column is provided for expenses such as cartage, &c. At the end of each week the labor on each contract is entered in the column devoted to labor. This is obtained from the time roll book, compared with the time sheets.

CONTRACT ACCOUNT BOOK.

The contract account book, a portion of a page of which is illustrated in Fig. 8, reduced, is the book in which all charges against contracts are assembled by transferring them from the other books. A page or more is devoted to each contract account. It is headed at the left with the name of the contract and the contractor. At the right the contract price is entered with a line beneath on which to make a memorandum of extras. When all the invoices for the month have been received

they are transferred from the invoice book and are designated as "Bills." Labor and expenses are also transferred from the same book, "L" designating labor and "Ex" expenses. Material from the shop taken out on foremen's orders are transferred from the material book

rough; finished and polished and nickel plated. Emphasis is laid by the company on the uniform thickness of the walls of their Bibbs and Cocks.

A Sample of Trade Protection.

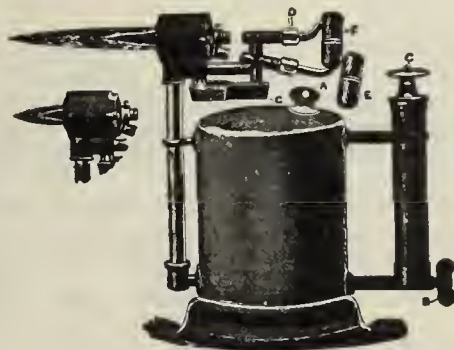
That the manufacturers and jobbers of plumbing supplies afford a liberal protection to the contracting plumbing trade is a fact that does not receive as much consideration as it is entitled to. Evidence of this is reflected in the following authentic account of the effort of a real estate agent to secure plumbing goods from a supply house which is said to sell to whoever applies for goods:

The real estate man entered the shop of a plumber who was well known to him, while the proprietor was absent, ostensibly to inquire the price of some work, and as the party in charge of the shop could not answer the question the plumber's card was asked for and received. Within an hour's time the plumber had returned to his shop and his friend who had taken charge of his business was still present when the telephone bell rang. An inquiry was made by the supply house in question whether or not he desired to have his customer receive goods at trade prices, or at any price, the statement being made that the customer had presented the plumber's card as evidence of good faith. Of course, the plumber said that he did not care to grant such a favor to anybody, and, in consequence, the real estate agent failed to secure about 10 dollars' worth of plumbing goods, although he showed his cash ready to pay for them. A little investigation proved to the plumber beyond question the identity of the real estate man and also satisfied the friend who had been in charge of his shop that it was the same man who secured from him one of the plumber's cards.

We are glad to be able to present this little example of trade protection, for, while there may be here and there an instance which doubtless has extenuating circumstances connected with it, where goods are sold to those outside of the trade, there is hardly room for doubt that in all cases, except the few which prove the rule, the manufacturers and jobbers of plumbing goods, in the support of trade protection, confine their sales strictly to the plumbers.

Turner Double Jet Gasoline Torch.

The Turner double jet gasoline torch, manufactured by Turner Brass Works, Chicago, is shown herewith. This blow torch is referred to as of the same general



Turner Double Jet Gasoline Torch.

appearance and construction as the ordinary blow torches now on the market, except the burner. It will be seen that there are two valves instead of one, as is customary in burners of this kind. In this double jet construction one valve controls the air blast and the other the gas. The air and gas enter the combustion chamber in separate jets, and are there united in a blue flame of intensity to fuse nickel, it is claimed. The independent control of the gas and air enables the operator to secure perfect combustion as occasion requires for different kinds of work, thereby securing the maximum amount of heat that is possible by mechanical means. The heat produced by the double jet is said to be 3000 degrees. The double jet torch is claimed to be capable of performing work heretofore considered impossible.

Park Theatre				Cont	500
Jno Smith Contr.				Extras	200
					700
Jan 2	L	20	Mar 3	6	700
5	Ex	30			
31	Bill of Jan	200			
31	Deliveries	50			
Feb 4	L	40			
11	L	100			
28	Bills	100			
	Deliveries	100			
		640			

Fig. 8.—Contract Account Book.

to the contract account book, and are designated as "Deliveries." At the time the first payment becomes due, or when a requisition is to be made on the contractor for money, a charge of the account is made in the ledger.

CHARGE SHEETS.

For job work a charge sheet, as illustrated in Fig. 9, reduced, is furnished to the workmen. The sheet is of manila stock paper, about 6 x 9 inches in size. A memorandum of the work to be done is written by the

Telephone, 1380-18th.

J. W. COONEY,
355 W. 26th Street.
New York, N.Y.

CHARGE SHEET

104
ON
M. No. 1081
30 floor

Ref. to closer and
hanks and faucets
throughout house

One (1) new ball cock
6 washers

1 Ds. 2 hrs. Plumber J. W. Doe
1 Ds. 1 hr. Helper R. A. Roe

Fig. 9.—Charge Sheet, Size 6 x 9 Inches.

bookkeeper on the sheet. The material used and the time consumed in making the repairs are entered on the sheet by the workman. The time is also entered on the workman's time sheet. These charges go in their regular course to ledger accounts.

THE NEW DEPARTURE MFG. COMPANY, Bristol, Conn., for whom John H. Graham & Co., 113 Chambers street, New York, are selling agents, have just issued a new illustrated catalogue of Plumbers' Brass Goods, which is a new line with the house, showing Compression Bibbs, plain and hose, with T handles, both for lead pipe and iron pipe with shoulder. They also make Lever Handle Bibbs for lead and iron pipe, Brass Racking Cocks, fast and loose key to screw or drive, Brass Liquor Cocks, Bottling Cocks, Compression Lock Cocks, Compression Wash Tray Bibbs, &c. They can be furnished in the

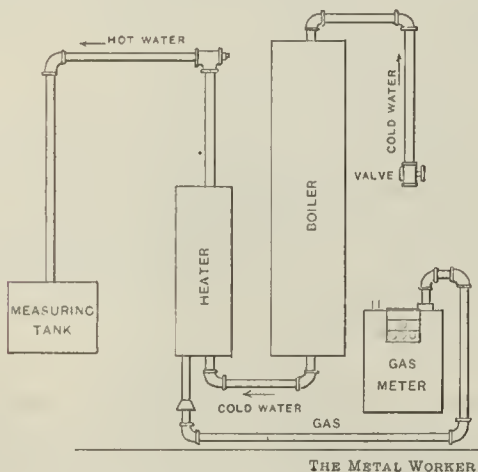
DOMESTIC GAS WATER HEATERS.*

BY W. B. CALKINS.

By the term domestic water heaters we refer to such heaters as use gas for fuel and are placed in connection with the ordinary kitchen boilers for the purpose of heating large or small quantities of water. If a gas company are so situated that they have to compete with a strong coal market a good water heater, properly connected, will serve a twofold purpose: 1, Of furnishing quickly and economically a large or small quantity of hot water; 2, of serving to keep fuel gas in use all the year around. If the climate is not too severe a good water heater tends to lengthen the life of the gas range two or three months, if not keeping it in use the entire year. In order to determine the efficiency of the different makes of water heaters a series of tests were made by the Denver Gas & Electric Company, the details of the tests being as follows:

Each pressure heater was set in position, as shown in Fig. 1, the cold water inlet being connected to a 30-gallon boiler, and the flow of water through the boiler and heater was regulated by a valve on the cold water inlet to the boiler. The hot water from the heater was not allowed to return to the boiler, but was conducted to a measuring tank through a short piece of hose. The water used in these tests was drawn from the city mains; the temperature of the ingoing water was taken before each test and found to be very constant.

In each test the temperature of hot water coming from the heater was allowed to become constant before the test was started. The temperature of hot water was taken several times during the test to see that no variation took place. The gas was passed through a portable five-light test meter, and the number of cubic feet burned was carefully noted. In each test 5 gallons, or 41.75 pounds, of water were passed through the heater and timed with a stop watch. Each cubic foot of gas



Domestic Gas Water Heaters.—Fig. 1.—Apparatus Connected for Test.

burned represented 540 B. T. U.; which number was taken as a basis of calculation in all tests. The average gas pressure was about 19-10 inch of water.

As a great many tests were made on each heater, we will give only that one showing the greatest efficiency.

		Cubic feet of Quan-		Time		Effi-	Gas	Water	B. T. U.
Inlet water.	Outlet water.	gas used.	tity of water.	of test.	Per ct.				
No. 1.	Deg.	Gal.							
52°	110	5.8	5	10' 35"	66.6	32.88	28.35	11,824.9	
No. 2.									
44°	102	6.6	5	12' 22"	51.6	32.01	24.25	8,919	
No. 3.									
52°	112	5.6	5	6' 42"	73.96	50.1	44.75	19,009	
No. 4a.									
54°	110	5.7	5	14' 35"	66.8	23.37	20.5	8,430	
No. 4b.									
54°	124	7.2	5	16' 36"	52	25.92	18	7,278	
No. 5.									
54°	118	6.5	5	13' 30"	58.5	28.86	22.20	9,116.8	

Water heaters Nos. 1, 2, 4a, 4b and 5 are the ordinary small pressure water heaters; heater No. 3 is of a larger type, better adapted for barber shops or small bath houses, as it occupies too much space for the ordinary kitchen.

The efficiency in each series of tests can easily be raised by allowing a greater quantity of water to flow through the heater, thus lowering the temperature, also cutting down the time in which the required quantity of water passes through the heater; this, in turn, lessens the number of cubic feet of gas burned. But this rapid

motion does not take place when the heater is properly connected with the boiler, as the only movement of water is that caused by the heat. This slow circulatory movement we have tried to imitate in all tests. Other tests were made in order to determine the best method of connecting the heater with the boiler, and from these tests we have deduced the following directions:

1. If possible, always connect the heater to the boiler so that the base of the heater will be on a level, if not

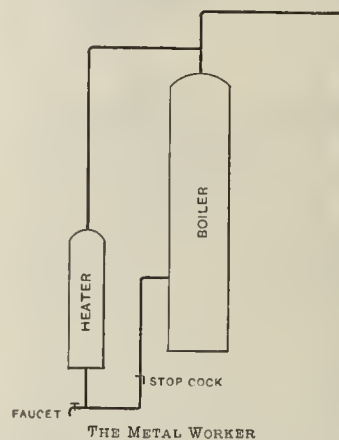


Fig. 2.—Right Connection.

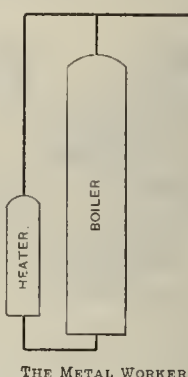


Fig. 3.—Wrong Connection.

a little below the bottom of the boiler. This allows for the free circulation of all the water in the boiler.

2. Connect the hot water outlet from the heater to the top of the boiler. This connection answers all purposes much better than the side connection.

3. Flush cocks should be placed on the bottom connection of all heaters, by which the heater, boiler and pipes can be flushed as often as needed.

4. All water heaters should be connected by a flue pipe to the chimney.

5. Cocks should be placed on the cold water connections between the boilers and the heaters. By this arrangement any back movement of hot water can be stopped after the fire is turned out under the heater; this prevents the heater from becoming a cooler. Other directions for the economic use of the water heaters should be prepared for the use of the people buying them, but as these will be more or less of a local nature we will not discuss them.

In the discussion of this paper F. W. Stone presented the following remarks:

The paper presented by Mr. Calkins is a most interesting one, and the subject is one of great importance to all sellers of gas. The tests given undoubtedly would show the efficiency of the different makes of hot water heaters, but it would seem to me that the most practical test would have been to have connected up the heater directly to the hot water boiler in the same manner in which it would be connected in the ordinary dwelling house, and then, by means of a thermometer, to have ascertained the rise in the temperature of the water in the boiler at different levels, because, as Mr. Calkins has said, the flow of water, when induced simply by a rising temperature, is more sluggish and quite different from that produced mechanically. The tests also seem to indicate a low efficiency. I have not the figures with me at present, but have made tests of hot water heaters, which, burning gas having approximately 650 B. T. U.'s per cubic foot, gave an efficiency from 70 to 75 per cent.

I have found more difficulty in educating plumbers to connect up domestic water heaters than I have in determining which heater was the best, and I believe that it is just as important, even more so, to have the heater connected properly as to have an efficient heater, and show in Figs. 2 and 3 a right and wrong connection for guidance. In connecting up a domestic water heater, in addition to the points mentioned by Mr. Calkins, it is better to somewhat reduce the size of the pipe where it connects into the hot water pipe at the top of the boiler, and also to be always sure to connect into the side of the tee and not in at the end, for when you connect into the end the flow of hot water at a faucet will sometimes draw the cold water right through the heater, and you will hardly get any hot water at the boiler. While the circulating domestic heater must be used wherever you have the boiler connected with the water back in the range, yet I believe that, where gas alone is used for heating hot water, the instantaneous heaters are the most economical. The pilot light on an instantaneous heater can be adjusted so as to consume but very little gas. There is no quantity of water to keep hot all the time, and they are arranged so that the flow of water caused by the opening of the faucet turns on the gas, and the water is heated as it passes through the heater.

I know of one make that will guarantee that, with

* Paper read before the Ohio Gas Light Association at meeting in Columbus, Ohio, March, 1902.

artificial gas testing 700 B. T. U., 1 foot of gas will heat 1 gallon of water from a temperature of 55 to 130 degrees. This would indicate an efficiency of over 89 per cent., which is much better than that indicated by the tests given by Mr. Calkins, and the outlet temperature is also much higher. The ordinary 30-gallon hot water boiler has 15 feet of radiating surface, and in the circulating type of domestic heaters it takes considerable gas to keep up the heat which is radiated by the hot water from this amount of surface.

A New Steam Goods Catalogue.

A very useful piece of trade literature has just been issued in the new catalogue of the Sumner & Goodwin Company, 287-289 Congress street, Boston, Mass. It consists of 367 pages and is divided into sections. The first section is devoted to wrought iron pipe and fittings and, in this connection, the announcement is made that the company are prepared to furnish pipe cut and threaded to sketch, from $\frac{1}{8}$ inch in diameter to 18 inches in diameter. A special diagram is presented with an explanation of how to order pipe, valves, unions and fittings to sketch, so as to avoid any error in measurement. The weight, thickness and the number of threads to the inch of standard, extra strong, double extra strong and large O. D. pipe are first given, followed by information in reference to lap welded casings, boiler tubes and their couplings. The next section of the book is devoted to cast iron fittings, a complete list of the standard sizes of elbows, tees, crosses, offsets, reducing couplings, &c., being furnished, followed by illustrations and list prices of fittings, such as return bends, Y's, return bends with outlets, flange unions, reducers, eccentric tees, plugs and bushings and a long list of malleable iron fittings. The catalogue also presents an extensive line of standard flange fittings with tables of dimensions in reference to them. Another section is occupied by cast iron drainage fittings, manifolds, hook plates, pipe hangers and ceiling plates.

Brass fittings, malleable pattern, comprising unions and railing fittings, standard brass valves and cocks, with check valves, throttle and safety valves, gas and service cocks form another section. Special valves, including horizontal and angle, check valves, radiator valves, flange angle and cross valves, butterfly and vacuum valves, hose valves and positive and automatic air valves, with brass steam swing joints and expansion joints, occupy a number of pages. Iron body and special valves and cocks, including globe and angle valves for all sizes of iron pipe, iron body check valves, back pressure valves, blow-off valves, pressure regulators, three-way cocks, iron body foot valves and strainers are then presented, while gate valves with brass or iron body and special valves occupy another section. Twenty pages are devoted to a special line of valves and boiler equipments manufactured by the Lunkenheimer Company. These are followed by 20 pages of goods manufactured under the name Belleville.

Another section of the catalogue is devoted to engine and boiler trimmings, pet cocks, water column bodies, gauge glasses and cutters, whistles, oil cups and a variety of lubricators, together with steam gauges and thermometers. Steam and hot water appliances, consisting of injectors, steam traps, return steam traps, Lawler's water feeders, exhaust pipe condenser heads, expansion tanks and governors and brass gas fixture fittings and brackets, including a variety of burners for both coal and acetylene gas, are then shown. Vertical sectional and round hot water and steam boilers are followed by the Triton and Chautauqua radiators, indirect radiators and radiator pedestals.

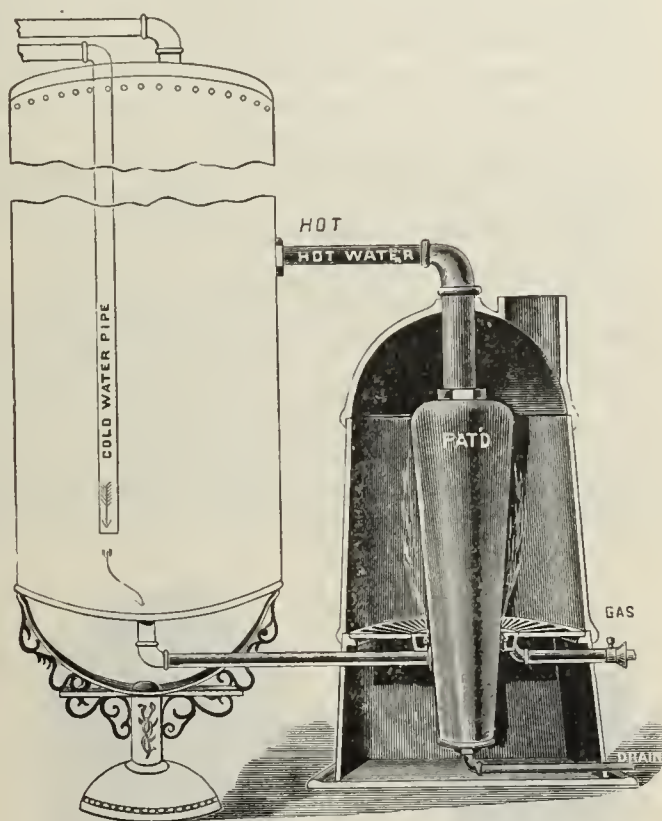
Water work supplies include a complete line of plumbers' brass goods, pressure regulators, unions and brass water connections. Hose goods include everything for equipping modern buildings with fire protection apparatus, and also for lawn and garden purposes.

A section devoted to pumps, hydrants and service boxes includes lift and force pumps, hydraulic rams, power pumps and service boxes, belting and miscellaneous supplies, which include pipe covering, bronzing liquid, enamels and metal polishes, are followed by tube expanders and cleaners, oilers, shovels, wheelbar-

rows and trucks. In the last section of the catalogue are shown steam, gas fitters' and machinists' tools, embracing pipe cutting and threading machines, both hand and power, pipe wrenches, drills, plyers, tapes, solder pots, fire pots, torches and tool chests. The catalogue closes with a well arranged index.

The Holden Combination Water Heater.

The growing custom of supplying the tenants of apartment houses with hot water has brought with it a demand for apparatus for this purpose. In sections where coal and, at times, natural gas are available, the demand for a combination apparatus using either of these fuels, has resulted in the production of the Holden water heater, by the Knight & Jillson Company, 123 South Pennsylvania street, Indianapolis, Ind. This heater was originally constructed in two sizes, using natural gas and designed for connection in the usual manner with the ordinary kitchen boiler. Its efficiency led to the production of larger sizes for use in coal



The Holden Combination Water Heater.

burning apparatus, and finally to the production of the combination apparatus, a broken view of which is shown herewith. The heater proper consists of a malleable iron, cone shaped cylinder, exposing to the fire a large amount of surface in proportion to the contents. The material of which it is constructed and the thickness of the walls enables the cone to stand a hydraulic pressure of over 1000 pounds.

Whether used for natural gas or coal, the construction provides a sediment chamber well below the fire line. It is claimed that in sections where lime water is used this location of the cone avoids encrusting with lime and choking. For cleaning, the cone is supplied with a brass plug near the bottom. For coal burning a convenient feed door is provided, and the grate is arranged to rotate so as to remove fine ashes. It is pointed out that in case a large quantity of water is needed quickly, both gas and coal fires can be used; or, should the gas pressure be particularly low, the heater can be operated with coal alone, and that in every case the consumption of fuel is light in proportion to the quantity of water heated. The heater is said to be equally well adapted to the use of artificial gas though this gas not being so rich as natural gas, does not heat the water so quickly. The claim is made by the manufacturers that the heater is so simple in construction that there is no difficulty in connecting it up or in operating it.

The International "F" Series Boilers.

A new boiler which has just been produced by the International Heater Company of Utica, N. Y., is shown in the accompanying illustrations. This boiler is made by the house with a view to meeting the demand for a round construction that embodies the features of convenience, efficiency and economy. In detail the construction consists of a deep ash pit equipped with a large ash door, in which swings a draft door to be operated by an automatic draft controller. The ash pit also supports the grate bars, which are connected by means of keys, with the bars attached to the shaker lever, and the grate stop is so arranged that by a simple movement the grate bars can be made to stand in a vertical position to free the fire pot of all of its accumulation. The water leg section, which is the fire pot, is deeply corrugated to promote combustion and not only adds materially to the fire surface of the boiler, but it also has radial arms extending inwardly at the top to form an auxiliary crown sheet. These waterways incline upward toward a central water passage through which, by means of large screw nipples, the water passes to the upper sections. The upper sections are arranged with ample smoke flues between them and are connected by means of staggered openings so as to extract, as far as possible, the principal heat from the products of combustion. In the upper section an adjustable baffle plate is arranged so that the draft may be controlled and the smoke outlet made larger or smaller, as the condition of the weather may require. The smoke dome at the top is fitted with a check draft for further controlling the drafts.

The construction of the steam boiler can be seen in Fig. 1, while the construction of the water boiler is shown in Fig. 2, the difference being in the height of the top chamber, which forms the steam drum in the steam heater. The boilers are made in 11 sizes for steam, having capacities of from 225 to 1200 square feet of direct radiation and the water boilers in ten sizes, with capacities ranging from 500 to 2000 square feet. The different sizes of the boilers have grates 15, 18, 21, 24, 28



Fig. 1.—Steam Boiler.



Fig. 2.—Hot Water Boiler.

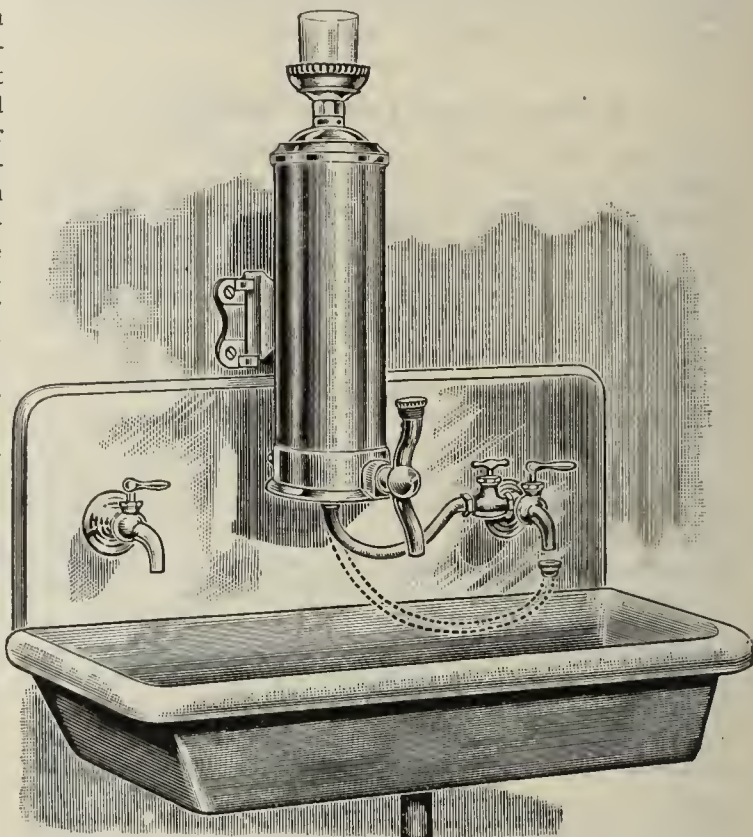
INTERNATIONAL "F" SERIES BOILERS.

and 32 inches in diameter, the different capacities being effected by the insertion of an extra upper section. The total height of the steam boilers to the top of the outlet ranges from 54 inches in the smallest to 68 inches in the largest size. The company have recently issued a catalogue with a separate price-list, giving full particulars in reference to these boilers.

Robertson's Filter.

The desirability of pure water for drinking purposes has led to the production of various filters for this purpose. In the accompanying illustration we show the Robertson germ proof automatic cleaning filter, made by the Robertson Mfg. Company, 203 West Utica street, Buffalo, N. Y. Owing to the facility with which the matter in water to be filtered will adhere to soft ma-

terial, the filtering rock selected for use in the Robertson filter is said to be of diamond hardness and to absolutely prevent any absorption of matter. The construction provides for a complete and perfect cleaning by simply reversing the turn stem down, shown at the base of the filter, after removing the cap, causing a re-



Robertson's Filter.

verse action, forcing the air and water through the filtering mediums and loosening and removing instantly all matter or germs deposited on the rock surface, which are carried off through the open ports. For convenience in attachment, the company furnish a wall plate into which the bracket of the filter adjusts itself, and from which it may be detached at any time. A hose pipe connection is also furnished with this filter, so that it may be connected as shown by means of dotted lines. The filter is made in a variety of sizes adapted for the requirements of residences, public buildings, hotels and places where a large supply of pure water is desired. The company have just issued special circulars devoted to this device.

Chandler Pump Catalogue.

The Chandler Pump Company of Cedar Rapids, Iowa, with a branch house at Kansas City, Mo., have just issued their pump catalogue No. 8, bound in a red cover and consisting of 216 pages. Following the title page is a bird's-eye view of the company's plant, with a picture of their Kansas City office. After an announcement to the trade, calling attention to their terms, extensive plant and exhaustive line of pumps and kindred supplies, special directions are given for setting wood pumps, with a note in reference to iron and porcelain cylinders, followed by directions for setting iron pumps. The first section of the catalogue is devoted to wooden cylinder pumps and wood curb chain pumps for ordinary and deep wells and for cisterns. Cast iron pumps come next, beginning with pitcher pumps, combined lift and force pumps, double acting house pumps, anti-freezing pumps, special pumps for wind mills and drive wells, open top and closed top hand pumps, patent packing tube, tubular well pumps, and pumps with three-way cocks and levers, or with compression valves. Another section is occupied by double acting force pumps for hand and wind mill use, among which is the Hawkeye, a double acting tank pump, having a capacity of two barrels per minute. The Hawkeye spray pump and fire extinguishers are then considered, and several pages are devoted to iron, brass and brass lined cylinder pump

valves, valve and plunger leathers and a price-list of the various parts of the different pumps made.

The next 20 pages contain reference to tubular well cylinders, drive points, earth augers, drills, valve grabs and various styles of couplers and check valves. Wind mill pump stuffing heads, float valves, air chambers, pipe dogs, pipe lifters, wind mill regulators and tackle form another section of the catalogue. The succeeding pages are devoted to steel and wooden water storage tanks, followed by pictures of the Hawkeye heater for heating the water for stock use, and the Dewey automatic stock waterer, designed to always have a supply of fresh water in the drinking fonts. Street hydrants, enameled sinks and brackets and slop sinks are followed by laundry trays, kitchen boilers and a complete line of malleable pipe and railing fittings, wrought iron pipe and cast iron fittings, including manifolds, hook plates, pipe hangers and ceiling plates. Plumbers' brass goods, including stop and waste cocks, sill cocks, lever handle and compression bibbs. Fuller bibbs and wash basin and pantry cocks are then presented, the remainder of the catalogue being devoted to brass goods adapted for the use of steam fitters and hose, belting and packing, as well as a variety of steam fitters' tools. The catalogue closes with a well arranged index.

THE AMERICAN RADIATOR COMPANY'S NEW PUBLICATIONS.

We have received from the American Radiator Company, Chicago, copies of three interesting publications which they are just distributing to the trade. These publications comprise a *brochure* entitled "The Homes Successful," a catalogue of the Acme fire box boilers, and a pamphlet entitled "Heating Advertisements that Aid."

THE HOMES SUCCESSFUL.

This is the twelfth edition of a most interesting presentation of the merits and advantages of hot water and steam heating. It is one of the most artistic specimens of trade literature ever brought out. It is not only most beautifully printed, but every page is adorned with illustrations which are reproductions of photographs. The nature of the illustrations is such as to illuminate the text, and consequently make what would ordinarily be dry or technical reading attractive to the general public. The arrangement is happily conceived, as the ordinary catalogue devoted to a description of heating apparatus is not very interesting to the ordinary reader. The man or woman who takes up this dainty publication, however, will be fascinated by its style, and will hardly lay it down until every page has been not only carefully read, but its statements have been given serious consideration. This edition of the publication is bound in a heavy paper cover, which is illustrated in colors.

ACME FIRE BOX BOILERS.

This catalogue gives full details regarding the construction of the Acme fire box boiler, which is designed for low pressure steam heating, or for heating by hot water. The Acme boiler differs from the ordinary horizontal tubular steam boilers sold for low pressure heating in the important particular that the fire box is inclosed in the boiler, thus making it internally fired, which necessarily causes the maximum efficiency of the fuel to be utilized for heating the water. The close proximity of the fire to the shorter tubes employed distribute far more conveniently the products of combustion, especially where a slow, deep fire is maintained. This boiler is especially adapted for installation in low cellars, and is arranged for the use of either hard or soft coal as a fuel, or for use as a wood burner. It can be brick set, or installed in portable form. It is made in 14 sizes, having a capacity ranging from 850 to 5800 square feet of direct steam radiation, and from 1350 to 9300 square feet of direct water radiation. The illustrations give a perspective view of the boiler, a broken view showing the construction of the fire box, another broken view showing the smoke travel, and a number of small illustrations of the fire box, grate, arch plates, rear covering plate, slide damper, &c. Complete direc-

tions are given for setting the boiler. The catalogue further contains illustrations of tank heaters, storage tanks, radiators, and an interesting chapter relative to the construction of chimneys, as well as a very complete telegraphic code for ordering by wire.

HEATING ADVERTISEMENTS THAT AID.

The American Radiator Company pay a great deal of attention to the education of their customers in methods of increasing trade. They endeavor in every way to assist their customers to extend their business. From time to time they have issued hints of methods which can be adopted in stimulating the local interest in hot water or steam heating. The pamphlet which has just been issued under the above title is a more elaborate presentation of methods of advertising by heating contractors. The work contains a very large number of prints of electrotypes, of which the company will loan the use of duplicates, having a space left in a blank for the insertion of the name of the steam fitter who is advertising in his local journals. These electrotypes display a great deal of originality in getting up attractive designs, as well as reading matter which presents telling points and catchy ideas. The publication itself is exceptionally well gotten up, and preserves in every respect the high ideals aimed at by the company in the preparation of their publications.

STEAM FITTERS' TRADE RESOLUTIONS.

The July number of the *Official Bulletin* of the National Association of Master Steam and Hot Water Fitters contains the following information relating to action taken at the national convention in Atlantic City in June, which will be of interest alike to the wholesale and retail trade:

Members, and manufacturers and dealers, are requested to note that no change was made in our

TRADE RESOLUTIONS

and it is, therefore, incumbent upon all who are "now in accord" to take such steps as will avoid any infractions by their employees or agents who are under their control. An important resolution that was adopted is as follows:

"Whereas, Certain boiler and radiator manufacturers canvass our prospective customers and make plans, specifications and estimates for them to our injury; and,

"Whereas, These boiler manufacturers endeavor to have tinsmiths do the work under the boiler manufacturers' supervising; therefore be it

"Resolved, That it is detrimental to our interests to purchase goods of boiler or radiator manufacturers who make plans, specifications or estimates on heating work."

The foregoing resolution was heartily supported by everybody present. There is very little doubt that the manufacturer who persists in making plans and specifications for people who are utterly incompetent to do a piece of work without their assistance will fare badly at the hands of the reputable master steam fitters, of which class this association is composed.

One of the recommendations adopted was to the effect that we notify manufacturers and dealers on our List in Accord that general contractors or building constructors doing steam heating and ventilating are not entitled to be placed on our Exempt Consumers' List.

This view is already held by many of the reputable manufacturers and dealers, and it will be a short sighted manufacturer or dealer who thinks he can do better by catering to such class of concerns instead of confining his sales to the trade—to wit, to master steam fitters who are his principal means of support year in and year out.

This association does not say that any manufacturer or dealer can sell or cannot sell to any particular person or class of customers, but it certainly must be clear, to all who have ordinary intelligence that manufacturers and dealers who do sell or quote to consumers that cannot be classed as being in the trade should be considered as not carrying out the spirit of our trade resolutions, and therefore not entitled to a place upon our List in Accord.

We expect our members to assist in placing the goods of all reputable concerns on our List in Accord, and if members turn a cold shoulder to those who do not think it worth while to protect them, there is no one to blame but themselves.

JOHN DUFF, custodian of the United States Post Office, New Bedford, Mass., will receive bids until July 30 for plumbing and other repairs to the building.

The British Tube Association Re-established.

Since the collapse of the British Tube Association nearly 12 months ago competition has increased and underselling assumed a most acute form. At length some of the leading manufacturers in the Midlands and Glasgow have decided to take steps to reorganize the trade and prevent the cutting of prices. The urgency of protective measures was emphasized when the recent advance of the minimum basis of gas strip to £7 a ton was declared. Accordingly a general meeting of the trade was held last week at Carlisle, as being the most accessible center for Scotch and Lancashire as well as Midland representatives. It is understood that there was a fully representative gathering, and after a lengthy discussion it was decided to reconstitute the British Tube Association, and that prices in the meantime be fixed on the basis of 72½ per cent. discount off the list of gas, steam and water tubes. A further meeting will be held to appoint a president, and it is expected that the headquarters will be fixed in Birmingham.

The American Radiator Company's New Boiler Plant.

E. R. Stoughton, the representative of the American Radiator Company, at Buffalo, N. Y., in an interview with a representative of the *Commercial* of that city, recently stated that the mammoth new plant for the manufacture of boilers for the company at Black Rock is expected to be completed and in operation in September. The building of this plant is said to be one of the best examples of rapid construction in the history of the city. When completed it will be one of the largest and finest boiler foundries in the country. It is built similar to the plant of the company at Detroit. The power for the new plant will be electric, a contract having been made with the Cataract Power & Conduit Company for 315 horse-power. The new plant is to comprise six buildings, the largest of which will be the foundry, which will cover a space 200 x 300 feet. The entire plant will be of modern fire proof construction, with steel frame and brick walls. The buildings will be covered with steel roofing, laid on rafters of the steel bridge construction type, and the completed roof will cover an area of 150,000 square feet.

New Valve Factory.

The Pittsburgh Valve & Fittings Company, whose incorporation under the laws of New Jersey was recently reported in these columns, have completed their organization with the election of the following directors: James I. Buchanan, William D. Hartupée, C. A. Verner, L. D. Castle, J. A. O'Neill and M. J. Alexander. The board elected W. D. Hartupée as president, and M. J. Alexander as secretary and treasurer of the company. A site for a large plant has been secured by the corporation at Barberton, Ohio, near the plant of the Columbia Chemical Company, both concerns being Pittsburgh enterprises. The buildings for the new plant at Barberton are already under way. The plans call for eight structures of stone and brick, one of which will cover 4 acres. They are to be located in a 75-acre plot, with direct communication with the Baltimore & Ohio, New York Central, Pennsylvania and Erie Railroad lines. The machinery for the plant is being constructed of special design, and each machine will be operated by an electric motor. The concern propose to manufacture their own brass, securing their supply of copper from Montana and their spelter from Illinois. A practically inexhaustible supply of core and molding sand is located on the company's property. It is scarcely necessary to add that the plant will be modern in every particular.

LEIGHTON & DAVENPORT, Bangor, Maine, bid \$1628 and secured the contract for installing a hot air heating system in the Union Street School in that city, this system having been decided upon as best adapted to the needs of the building. The company also secured the plumbing contract at their bid of \$770.

Pierce Boilers and Radiators.

The Pierce, Butler & Pierce Mfg. Company, Syracuse, N. Y., are sending to the trade a new catalogue of their line of steam and hot water boilers of both the surface burning and magazine feed types, which also shows a great variety of indirect, direct-indirect and direct radiators. The catalogue consists of 45 pages, 4 x 9 inches in size, and is provided with a convenient index. The first portion of the book is devoted to the company's steam boilers. The American boilers, which occupy the leading place, are of the vertical, sectional, return flue type, made with 20, 28, 36 and 44 inch grates, rated to carry from 550 to 5600 feet of direct steam radiation. These are followed by the Florida, Soleil, Touraine, Ontario, Florida Junior and Improved Giant boilers, all of round form and of a construction to enable them to be set up quickly by the steam fitter. Seventeen pages are devoted to the Advance, Spence, Perfect, Tropic, Touraine, Ontario, Tropic Junior and Giant water heaters, adapted for carrying from 60 to 9250 square feet of radiation. The Giant and Tropic Junior boilers are well adapted for small heating work, and are especially constructed with a view of meeting the requirements of hot water supply systems for domestic purposes, in large apartment houses, and in hotels and restaurants. In the last portion of the catalogue are shown the Lorraine radiators, which are made in one, two, three and four columns, and of all heights, from 18 to 44 inches, followed by the Bremen, Syracuse and Reliance radiators, which are made with both ornamental and smooth finish, and in all heights from 20 to 45 inches.

New York City Notes.

Richmond Branch, in proportion, seems to be the busiest just now. Nearly all the plumbers from Mariners' Harbor around to Tottenville report that they are busy.

* * *

With the exception of small houses in the new parts of the borough Brooklyn reports things as quiet. The time is not yet ripe there for the large elevator departments, which are the only profitable structures of the kind now built under the Tenement House rules.

* * *

W. Y. Jack & Co. are plumbing a new foundry that is being erected for the E. W. Bliss Company on Twenty-third street east of Second avenue; Howe & Bassett, in addition to their Tombs job, have a loft and a store building well under way at 247-251 Sixth avenue; John Tucker has a large warehouse for the New York Terminal Company, at Twenty-eighth street and Thirteenth avenue; Smith & Roffler are plumbing a flat at 229-233 West 124th street; John Rendall of the Bronx is well along in the plumbing of a large apartment house on Amsterdam avenue, between 183d and 184th streets, and Rody McDermott is plumbing four of the seven high-class private houses that are being erected on Fifty-first street, between Madison and Park avenues. James Armstrong is doing the other three.

* * *

The lower East Side is well represented in the new work just given out. William Nusser has three tenements at 346-350 East Twentieth street; B. W. Rod has two tenements at 38 and 40 Stuyvesant street, also at 229-231 East Twentieth street; P. Lauria has a row of tenements on Fourteenth street near Second avenue, also at 742 and 744 Sixth street; Richard Tretler has an apartment at 153 and 155 East Eighteenth street; Samuel Greenwald has an apartment at 141 and 143 West Tenth street, and George Dillon has a tenement at 233 and 235 Henry street.

ANDREW MCGLYNN & Co., Taunton, Mass., have secured the contract for plumbing and heating the new parochial residence of St. Mary's Church in that city.

THE annual meeting of the Canadian National Association of Master Plumbers will be held at Halifax, N. S., on August 13 and 14, with headquarters at the Queen's Hotel. Arrangements have been made for the entertainment of the delegates for a drive about the city on their arrival and a banquet on the evening of the 13th. On the 14th there will be an excursion on the harbor.

Lynn Master Plumbers' Banquet.

Through the courtesy of Secretary C. T. Dame, we have received the following account of the first annual banquet of the Master Plumbers' Association of Lynn, Mass., held in the hall in the Heffernan Block last Monday night, and which was a most complete social success:

The banquet was in itself a most elaborate affair and was heartily enjoyed by all present from the moment that the turkey and salads made their appearance until the party dispersed near midnight.

While those present were enjoying their after dinner cigars Walter H. Danforth, president of the Lynn Master Plumbers' Association, arose and briefly addressed the gathering, closing by introducing as the first speaker of the evening Daniel Shannon of Boston, president of the State Association, who spoke briefly, but to the point, offering some suggestions for the improvement of the organization and relating some of his experiences as a delegate while attending the conventions of the National Plumbers' Association at Atlantic City, Cleveland, and elsewhere.

The president then introduced Charles Chamberlain, Inspector of Plumbing for the City of Lynn, whose remarks were greeted with warm approval. He was followed by E. C. Stokes of Boston, who regretted the fact that so many plumbing shops are not kept in a state of cleanliness and assured his hearers that it is the clean, well kept shop that draws the best trade and makes the most money.

At the close of his remarks Eddie Mumford rendered several pleasing selections to his own accompaniment on the piano. Other speakers were Charles C. Brown, State organizer; R. L. Cochrane, Health Inspector at Nahant, and Patrick Gargan. William B. Daley gave a number of vocal selections and several character impersonations, while topical songs were sung by James Petrie.

Among those present were W. F. Brown, W. C. Quinby, J. F. Morgan, E. C. Stokes, R. L. Cochrane, Charles Chamberlain, Daniel Shannon, Charles C. Brown, James F. Ryan, Joseph McIlvery, George F. Stoddard, L. E. Gorham, William B. Daley, Edward Mumford, P. T. May, L. A. May, J. N. Pope, R. J. White, T. B. Reardon and Frank H. Morgan.

The committee in charge of the affair was composed of Clement T. Dame, Walter H. Danforth and W. C. Quinby, and it was to their untiring efforts that the chief success of the event was largely due.

A Plumbing Goods Catalogue.

Catalogue No. 60, issued by the Rumsey & Sikemeier Company of 19 Pine street, St. Louis, Mo., is devoted to plumbers' and steam fitters' goods. In the opening pages are given half tone engravings of fine bath rooms, the equipment of which includes foot, sitz and shower baths, enameled bath tubs, and handsome lavatories with towel brackets, linen baskets, soap and sponge holders, and other bathroom equipments. The next 25 pages of the catalogue are devoted to steel clad and enameled bath tubs and enameled porcelain lined cast iron tubs of both French and Roman pattern, with a variety of styles of roll rim, both wide and narrow, foot and sitz baths. Shower baths, from the ring shower, head shower and ordinary douche, to the complete needle bath, occupy another section. A variety of styles of laundry tubs are shown in enameled cast iron, stone and solid porcelain, followed by an extensive line of kitchen and laundry sinks and slop sinks, made of all the usual materials, together with a wide assortment of fine enameled iron, solid porcelain and marble lavatories and sectional lavatories adapted for public buildings. Urinals and urinal stalls form another portion of the catalogue, together with water closets of the wash out, wash down and siphon jet type, with both high and low down flushing tanks, and without tanks to be flushed directly from the service pipe by means of a special valve. The catalogue also includes a line of wash out range water closets and frost proof closets. The Richmond boilers,

both sectional and round, for steam and hot water heating, are followed by an extensive line of direct and indirect radiators, steam traps and other specialties for steam fitters. The catalogue consists of 150 pages and has a well arranged index. It is bound in a red cloth cover.

Outing of Bronx Plumbers.

The Bronx Branch of the New York City Master Plumbers' Association gave their first annual outing last Thursday at Lohbauer's Park, Throgg's Neck, and it was a success in every way. The weather in the morning was not all that could be desired and at noon there was a terrific thunder and hail storm, the hailstones being as large as the proverbial egg and making all hands seek cover. The storm over, however, the games began.

Florence Stolz won the swimming race, as he could keep afloat with the least exertion. The ball game was won by the plumbers with a score of 20 to 15 by the supply men. Owing to the storm and the subsequent absence of wind the boat race was not a success. The running race of 100 yards was won by Joseph Carr, the plumbers' blacksmith. The three-legged race of 100 yards was won easily by Delaney and McEvily.

Among those present were Jos. Lewis of the City Department of Water Supply; Frank E. Moore of the Bureau of Buildings; Michael Hecht, superintendent of the Bureau of Public Buildings, and representatives from the other city departments. The supply trade was represented by the following concerns: Dimock & Fink Company, the Standard Plumbing Supply Company, the Metropolitan Supply Company, Richardson & Boynton Company, G. B. Raymond, J. A. Murray, Henry Huber Company, the E. S. Wheeler Company, Essex Bros. and others. Among the master plumbers present were Fred. Steiger, Salzman & Freitag, H. Rudolph, Lawrence McCann, J. P. Muller, D. L. Delaney, J. W. Sweeney, J. J. McManus, J. V. McEvily, D. Durie, Jr., Peter Schweickert, J. F. Hogan, Wm. Clark, Florence Stolz, Martin Klett, Ozab & Muller and others.

Brooklyn Master Plumbers' Outing.

Chairman E. Macdonald of the Entertainment Committee of the Brooklyn Branch of the Association of Master Plumbers of the city of New York, has favored *The Metal Worker* with a complimentary ticket for the annual outing of the association, which will be held at Donnelly's Grove, College Point, N. Y., on Wednesday, July 23. The steamer will leave the Bridge Dock at Fulton Ferry at 9 o'clock sharp. Music for the outing will be furnished by Professor Lent. The notice sent out to the members states that the association has reason to be proud of the character of their outings in the past, and though a right, royal good time has been the order of the day, a single incident has never occurred which would mar the pleasure of an individual. The members are invited to lay aside their cares on that day, bring the ladies and children and enjoy the outing. Tickets for adults are \$3, and for children 75 cents, which includes everything that will be required for the day. The tickets have a coupon for breakfast, to be served on arrival at the grove, and another for the dinner, to be served late in the afternoon. The Entertainment Committee is composed of E. Macdonald, William M. Brown, William Eiermann, S. J. Corcoran, Lewis Deiser and George W. Smyth. Those desiring tickets can secure them from E. Macdonald, 98 Cedar street, Brooklyn, N. Y.

The success of last year's outing of the Master Plumbers' Association of Jersey City, N. J., has led to the appointment of the following committee to make arrangements to repeat the trolley ride on Saturday afternoon, August 23: J. J. Ivans, chairman; W. J. Cross, Valentine J. Werner, Thomas J. Heatherton, George W. Knoll and J. M. Doran. Cars will leave the Pennsylvania Ferry at 2 o'clock for Wagner's Washington Park, Carlstadt, N. J., where Boket's Band will enliven the festivities.

Old Sanitary Theories Assailed.

William T. Sedgwick, professor of biology and lecturer on sanitary science and the public health in the Massachusetts Institute of Technology, and at one time biologist to the Board of Health of that State, says the *Chicago Tribune*, has recently published a work on sanitary science in which he not only upsets many popular beliefs, but takes direct issue with many scientific theories which have come to be accepted as law and gospel.

Professor Sedgwick thinks that the danger of sickness from the emanation of gases from sewers, drains, cesspools, &c., is greatly exaggerated. The air in sewers being unusually quiet, he claims it is comparatively free from bacteria. Stagnant sewage as found in cesspools is more dangerous, but even this he does not believe produces specific diseases, such as typhoid fever and diphtheria. He finds no connection between broken drains and epidemics, and says on this point "it is difficult to understand how the accumulation of sewage in a cellar or leakages of sewage from broken drains, or the escape of gases from such drains, can possibly provoke infectious diseases." He says: "The gases may by their toxic effect lower vital resistance and increase susceptibility, and probably their responsibility stops there." He also repudiates the noxious effects of bad smells and quotes in defense of his theory the most famous stench on record—that of the Thames in 1858 and 1859, which broke up Parliament and the law courts, stopped all steamer traffic on the river and drove the Londoners from the bridges. Yet during the time of its prevalence there was a notably low death rate and a diminution in all the diseases popularly attributed to stench.

Furthermore, Professor Sedgwick relieves the atmosphere of much responsibility for the propagation of certain diseases. He takes no stock in late springs, hard winters, newly turned up soil or prolonged cloudy weather as producers of disease. He does not believe in the unwholesomeness of damp cellars. He prefers old water to fresh water, because in the former the harmful bacteria have had time to die out, and claims that river water is less dangerous when the river is low than during freshets. He states the paradox that "whenever water is freshest it may be least safe; and when rich in sewage it is not necessarily more dangerous."

Professor Sedgwick runs counter to nearly all the accepted theories of sanitary science, and this brings up the old question: When the doctors disagree, what are you going to do? Perhaps it might be better to go along and pay no attention to any of them, as our grandfathers used to do—and they were fairly healthy. And yet there is a compensatory side to Professor Sedgwick's negations, as stated by the Springfield (Mass.) *Republican* in a long review of his book: "The terrors of civilization are getting to be oppressive and one might about as well contract a disease as live in constant fear of it. Cleanliness is an excellent virtue, but it is not necessary to be frightened to death by a little dirt. Professor Sedgwick is considerate enough to drive away a good many of the bogies."

Heating and Plumbing Notes.

THE strike in the plumbing trade, which has been in existence for several weeks at Toronto, Canada, has been settled by an advance in wages of 2½ cents per hour, with a further advance to take effect January 1, 1903. The wages will be 32 cents per hour. The plumbers struck for 37½ cents per hour.

THE ROYAL STEAM HEATER COMPANY of Gardner, Mass., have secured the contract for heating a school building and will use one of the American Sectional Boilers, made by the Pierce, Butler & Pierce Mfg. Company, Syracuse, N. Y.

THE Board of Examining Plumbers of Bridgeport, Conn., consists of A. L. McGrath, president; Building Inspector Rowland, secretary, and W. S. Hurlburt, Andrew Owens and Joseph Mullins.

CAHILL & SMITH, Pittsfield, Mass., have a \$2000 plumbing contract for a new house at Chatham, N. Y.

A FIRE which visited the Acadia Mines, at Truro, Nova Scotia, on July 7, swept away the plant of the Montreal Pipe Foundry Company, located near the mine. All of the buildings, with the exception of the machine shop, were old. The loss is estimated at \$25,000, and is fully covered by insurance.

A FIRE visited the plumbing establishment of M. B. Jordan, at Bangor, Maine, last week. Mr. Jordan suc-

ceeded in removing the majority of his stock from the building, and his loss was comparatively small.

THE NEW YORK PLUMBING COMPANY, of Omaha, Neb., who have the contract for furnishing the material and doing the plumbing for the new St. Bernard Hospital, erected by the Sisters of Mercy in that city, have had their men go out on strike, because the sisters have in their employ a nonunion plumber, who they insisted should aid in the new plumbing work in the new hospital. The sisters have relieved the New York Plumbing Company of the obligation to do the work, providing they continue to furnish the material, they securing the workmen to install it. The sisters seem to have no trouble in securing the necessary workmen, and on the refusal of the New York Plumbing Company to stop supplying the material, their workmen, under orders from the Omaha Union, have quit work.

SALT & ALLMON, Melrose, Mass., have secured the contract for plumbing the new electric light plant at Woburn. They also have a large contract for plumbing work at Charlestown.

THE CARLTON HARDWARE COMPANY, Calumet, Mich., have the contract for plumbing and heating a new house for Carl Nystrom.

At a meeting of the Wilkes-Barre Heat, Light & Motor Company, Wilkes-Barre, Pa., on July 10, it was voted to notify customers of the company that the rates for steam would be advanced 20 per cent., owing to the increased cost of manufacture.

THE Schoolhouse Commissioners of the city of Boston, Mass., will receive bids until July 28 for heating and plumbing the primary school building at Westville street, Dorchester.

A LITTLE PAMPHLET from the Abendroth & Root Mfg. Company, 99 John street, New York, gives notice of the resumption of their business, after the fire which destroyed their plant in Brooklyn, in a new plant at Newburgh, N. Y., where they are prepared to furnish the Root Boilers and the Spiral Riveted Pipes and Fittings formerly made by them. The company now enjoy excellent facilities for handling large work promptly, and also new branches of foundry and machine work.

THE NOVELTY IRON COMPANY, Canton, Ohio, are sending to the trade two interesting pieces of trade literature. One is a catalogue of 36 pages, devoted to the Our Own line of Steam and Hot Water Heaters. The catalogue opens with Tank Heaters and Heaters of larger capacity of both round and square form. Both horizontal and vertical sectional constructions are shown adapted for steam and hot water; also the Canton Radiators, which are made in two and three columns in all the different heights. The second catalogue is entitled "Our Own Steam Fitters' Handbook," and in addition to giving the extensive line of Boilers made by the house it includes a number of specialties required by steam fitters, including Radiator Valves, Pipe Hangers, Expansion Tanks, &c. This catalogue also contains a variety of tables and other useful information.

THE HARRISBURG PIPE & PIPE BENDING WORKS, Harrisburg, Pa., are building six furnaces for the heating of billets which will be used in the rolling mill being constructed for the company. All the product of the furnaces will be used in the works. Work on the new departments is being rapidly pushed and the buildings will be completed in a short time.

THE LUNKENHEIMER COMPANY have recently purchased a large number of Westinghouse induction motors for the equipment of their new works at Cincinnati, Ohio.

BALDWIN & PENNINGTON, Baltimore, Md., are preparing plans for a central heating plant for the State buildings at Annapolis, Md., to cost \$150,000.

CONTRACTS have been let for the new buildings of the Krein Company, who will establish a factory at Wapakoneta, Ohio, for the manufacture of Acetylene Gas Generators.

THE MUELLER MFG. COMPANY of Decatur, Ill., are erecting a new warehouse and office building. They manufacture Water and Gas Specialties.

RUMSEY & Co., Seneca Falls, N. Y., are sending out the fifty-third edition of their illustrated catalogue devoted to Hand and Power Pumps and Hydraulic and Pumping Machinery for all purposes. Among the new and improved goods shown are Double Acting Force Pumps, Wind Mill Double Acting Force Pumps; Deep Well Working Heads, Brass Soda Water Pressure Pumps, &c. The catalogue is well printed and contains more than 250 pages.

THE GLEASON, BAILEY & SCIPLE MFG. COMPANY, Seneca Falls, N. Y., issue a circular showing Brass Double Cylinder Force Pumps and Double Acting Suction and Force Pumps. Also a catalogue of Fittings for steam and hot water, of standard gas pipe sizes, which shows these goods made with a cast thread by a patent process owned and controlled by the company.

THE COLWELL LEAD COMPANY, 51 to 65 Centre street, New York, announce that they will close their stores and offices at 5 p.m. during the months of July and August. This concern also close at 1 p.m. on Saturdays during the summer months. It is said that there is not sufficient business transacted after 5 o'clock to warrant keeping open in the summer, and during the hot spell the extra half hour given to the employees will be appreciated and better results to the firm will be the effect.

JAMES B. CLOW & SONS, Chicago, Ill., are sending out three circulars that will be of interest to plumbers and steam fitters, one devoted to the Clow Portable Pipe Machine for cutting and threading Pipe by hand power in all sizes up to 3 inches, while by means of belt power 4-inch Pipe can be cut. Another circular is devoted to the Climax Coupling for ammonia fittings, adapted for breweries, ice plants, cold storage plants and such work. The third circular is devoted to the Clow Triumph Water Heaters, made in eight different sizes, having a capacity from 150 to 900 gallons of water per hour.

New Firms and Changes.

CASEY & SHERMAN are a new firm who will engage in the manufacture of Boilers in Chattanooga, Tenn. Mr. Casey was with the Casey & Hedges Mfg. Company for a number of years as their foreman, and Mr. Sherman was a traveling salesman for the same house. They are building a new plant and have purchased most of the machinery for its equipment.

THE BALTIMORE REFRIGERATING & HEATING COMPANY, Baltimore, Md., who were incorporated last week with a capital of \$1,000,000, having recently received a franchise, intend to issue \$2,000,000 in bonds. The company have headquarters at 105 Smith street. The president is R. B. Fentress of Norfolk, vice-president, S. B. Medairy; secretary, John F. Sippel; general manager, L. M. Tough. They have purchased a large cold storage warehouse and plant, which is now being extensively enlarged and improved, and will be equipped with boilers of 4000 horse-power and refrigerating machinery with 700 tons capacity. The company intend to supply the general trade through underground subways.

SEABORN & DEAN, plumbers and tinsmiths at Fort Fairfield, Maine, have removed their business to a shop at the foot of Hacker Hill.

THE UNITED STATES COUPLING & SUPPLY COMPANY of Gardiner, Maine, have been incorporated with a capital of \$100,000 for making and selling all kinds of Tools, Machinery, Hose, &c. The officers are: President, H. E. Robinson, Gardiner, Maine, and treasurer, E. L. Portti. Boothbay Harbor, Maine.

THE AMERICAN VALVE & METER COMPANY of Cincinnati, Ohio, have been incorporated with \$33,000 capital for the purpose of engaging in the manufacture of Meters. N. P. Tenner, Jr., William Porter, F. M. Foster, D. S. Marfield and C. E. Prior, all of Cincinnati, are the incorporators.

AT Frankfort, Ind., a company with a capital of \$25,000 are being organized to engage in the manufacture of Brass Goods, including Steam Fittings, &c. Those interested are D. A. Coulter, G. T. Dinwiddie, J. H. Coulter, W. H. Coulter, J. McClamroch, F. S. Coulter,

H. C. Sheridan, J. B. Meifeld, J. P. Given, H. F. Campbell and C. C. McFann.

GIBSON BROS. are successors to J. C. Gibson in the Agricultural Implement, Pump and Wind Mill business in Maxwell, Iowa.

E. R. TUTT, after 15 years' activity, has disposed of his Hardware, Stove, Plumbing and Heating business in Oakland, Cal., to the Ingram Hardware Company, comprising Wm. Ingram, Wm. McCaslin and John S. Gallagher. Mr. Ingram was formerly a member of the Schaw, Ingram & Batcher Company of Sacramento, where he has been located for a period of 30 years. The present commodious store at 511 and 513 Thirteenth street is to be renovated throughout. Mr. Tutt's headquarters will hereafter be in San Francisco, where he will do contract plumbing exclusively.

THE FIDELITY POTTERY COMPANY of Trenton, N. J., organized with Charles H. Barker as president and J. H. Cogill as secretary and treasurer, have purchased the plant formerly operated by the Egyptian Pottery Company and will continue under an entirely new management the manufacture of Sanitary Earthen Ware.

THE NATIONAL HYDRO CARBON GAS COMPANY of Bangor, Maine, have been incorporated with a capital of \$500,000 for producing, distributing, leasing and selling apparatus for lighting and heating purposes. The officers are: President, H. M. Cook, and treasurer, A. Fontaine, both of Bangor, Maine.

The No. 33 Gasoline Torch.

The newest production in the line of gasoline torches brought out by the Clayton & Lambert Mfg. Company, Detroit, Mich., is known as the No. 33 torch, of which



The No. 33 Gasoline Torch.

an illustration is given herewith. This torch is claimed by the manufacturers to be constructed on the best and most scientific principles and of the highest grade of materials. They recommend it as especially adapted for inside wiring, removing the putty from sashes, light brazing and many other kinds of work done by mechanics. The torch is light, self contained and can be carried in the pocket, and it is ready for use instantly, simply needing a match to light it. The tank is supplied with a dome so that air pressure can be applied, making a blue blast flame, which, while small, and running to a fine point, is intensely hot. The burner hangs on a swivel, so that the flame can be thrown in any direction. The makers point out that it is a powerful generator, consuming but little gasoline, and declare that it will save the user its cost in a short time. The catalogue published by the firm covering their gasoline fire pots and torches will be sent to any one interested in these goods upon application.

The June number of the *Iowa Engineer*, published by the Iowa State College, Ames, Iowa, will be of interest to those who desire to study the value of the different fuels of that State.

THE SHEET TRADE.

The first half of 1902 was an exceedingly active season in the sheet trade. Notwithstanding the entrance into the market of quite a number of independent mills the demand for black and galvanized sheets was constantly ahead of the producing capacity, and it has been only in the past few weeks that any let up has occurred and the mills have been enabled to make deliveries in anything like a reasonable time. While the advent of summer has brought with it some falling off in the demand for sheets, most of the mills, both in and outside of the combination, are still busy on orders, some of them with enough business on their books to keep them well occupied until the fall. A few of them now have been shut down for the purpose of undergoing the repairs and overhauling made necessary by a year's full and steady operation. There is little doubt that the past six months have been a remarkably profitable period for the manufacturers, as prices have been steadily maintained at a remunerative level, and they have had all the business they could handle. In fact many mills have been forced to turn down orders from want of ability to fill them within a reasonable period. The consumption of sheets this year must have been extraordinarily heavy for the large bulk of the material purchased seems to have gone directly into use. Stocks in jobber's hands have never been large and are still below the average. Some of the new independent sheet mills have been hampered in their operations by the difficulty in securing a sufficient supply of steel. Consequently they have not been able to run to the measure of their capacity, as have the plants of the American Sheet Steel Company. Some of these new concerns, however, who own their own steel plants have been able to make sheets and put them on the market in competition with the leading interest. Before the end of the year several more large modern mills will be completed by companies outside of the combination, when it seems that the producing capacity is likely to outstrip the demand, with the result that usually follows—namely, sharp competition and falling prices. The strength of the iron market, however, will probably tend to prevent any material decline in the price of sheets for some time to come.

CORRECT THE FORMULA.

An error crept into one of the "Formulas for Determining the Capacities of Vessels," given in the last issue of *The Metal Worker*, and as the contributor, F. W. Rudd, desires that no one shall suffer any inconvenience from it, we give the correct formula, as follows:

"Volume in gallons is found in the following formula:

"For a cylinder.

"Volume equals $D^2h \times 0.0034 +$."

By reference to the sixteenth line from the bottom of page 50 of *The Metal Worker* of July 12 it will be found that one of the ciphers between the decimal point and the figure 3 was omitted. To use the formula without the correction would give a cylinder a tenfold greater capacity than it actually has.

The Amalgamated Association.

At the recent convention of the Amalgamated Association of Iron, Steel and Tin Workers, at Wheeling, W. Va., it was decided that the vice-presidents of the various districts should meet at Columbus, Ohio, at as early a date as practicable, to compare special scales and district rulings, with a view to making them as nearly uniform as possible. Thursday, July 17, was agreed upon between President Shaffer of the Amalgamated Association and James H. Nutt of the Republic Iron & Steel Company as the date on which all the vice-presidents would meet in conference. In addition to the work assigned to it by the convention the meeting will also arrange the scale for plate mills. The meeting is an unique one in the history of the Amalgamated Association, nothing of the kind ever having been done

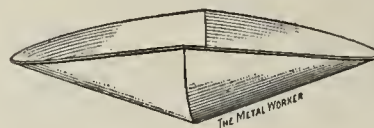
before. It was made necessary on account of the differences in various scales for special mills, which the association believes should be made more uniform.

PATTERN FOR SCALE SCOOP.

(Without allowance for laps).

A tinsmith is sometimes called upon to make a scale scoop of tin or polished brass. A finished view of such an article is shown in Fig. 1, where the top edge is wired and the joint either seamed or soldered. While the pattern can be obtained by the cone or radial line method a simpler rule is shown in Fig. 2, by which the pattern is developed by means of the parallel line method.

First draw the elevation of the scoop, as shown by A B C D. In practice one half elevation is all that is re-



Pattern for Scale Scoop.—Fig. 1.—Perspective View.

quired. From the point B, at right angles to D C, draw the line B E, on which line a true section must be obtained, as follows: Extend the line D C as D F. Parallel to D F, and from B draw the line B G. At any point, as H, at right angles to B G, draw the line H I, which represents the depth of the scoop. At pleasure establish the width of the scoop at the top, as shown by K and L. Draw a line from K to I, which bisect and obtain the point T. From T, at right angles to K I, draw a line intersecting the center line H I at J. With J as center and J K as radius describe the arc K I L, which represents the true section on the line B E in the elevation.

Divide the section into equal parts, as shown by the small figures 1 to 4 to 1, through which, parallel to G B,

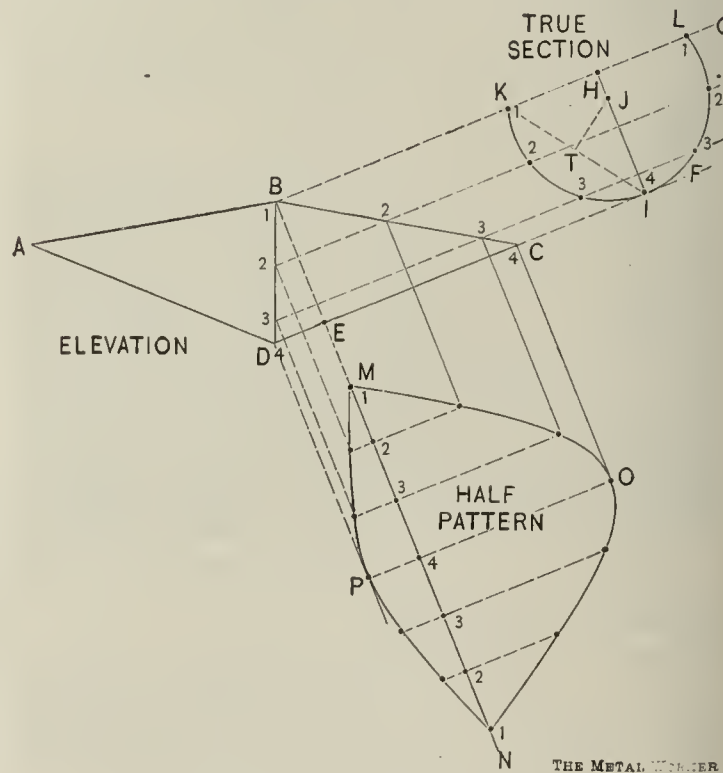


Fig. 2.—Elevation, Section and Pattern.

draw lines into the elevation, intersecting the lines B C and B D at points 1 to 4, as shown. Now, at right angles to D C draw the stretchout line M N, upon which place the stretchout of the true section, as shown by points 1 to 4 to 1 on M N; through which, at right angles to M N, draw lines, which intersect with lines drawn at right angles to D C from similar numbered intersections on B C and C D. A line traced through the points thus obtained, as shown by M O N P, will be the half pattern of the scale scoop. Allowance must be made for wiring and seaming.

THE TIN PLATE TRADE.

Replying to misleading reports circulated during the last week, W. T. Graham, president of the American Tin Plate Company, issued the following statement:

Reports published in this week's daily and trade papers representing that a cut in wages is contemplated by the American Tin Plate Company are absolutely untrue. The American Tin Plate Company have no difference with the Amalgamated Association of Iron and Steel Workers, and mutual feelings of satisfaction and friendliness between the company and all their workmen were never more pronounced than they are at the present time. The time of the recent conference between the company and the Amalgamated Association was entirely given to consideration of a question of mutual interest, and reached an agreement as to the course that would be advantageous to both. This question was one requiring decision by the several lodges of the association, and is now recommended to them for favorable action by the officers and all the members of the association's Conference Committee.

Soldering a Strainer on a Well Pipe.

The evidence that the "know how" is an important factor in deriving profit from work is clearly manifest in the method adopted by John Le Sauvage of Duane street, New York, who was employed by a customer to solder a perforated brass wire strainer over a 10-foot length of 6-inch galvanized iron pipe, which was perforated with some 180 holes of $1\frac{1}{4}$ inch diameter. This would be a tedious job if heavy and hot coppers alone were depended upon for getting up sufficient heat in the thick iron pipe to make the solder adhere strongly to it. The perforated wire was in sections 14 inches long, and in addition to the seams where the ends met the brass had to be soldered to the pipe at each end throughout the entire circumference. In order to expedite matters two fire pots were used, one for heating the soldering coppers, while the other fire pot was placed immediately under the pipe, which was supported conveniently for the purpose. By this means the heat of the fire pot heated up the pipe so that comparatively small coppers were capable of soaking the solder into the sections so as to make a substantial and durable job. To have soldered the brass strainers to this pipe without the aid of the extra fire pot would have consumed considerable time. Various tinsmiths, who were asked for an opinion as to the time that would be required, asserted that from three to four times the amount of time that was actually taken would be necessary to make a successful job. None of them considered the use of the extra fire pot as a time and labor saver.

Canton Metal Ceilings and Side Walls.

We are indebted to the Canton Steel Roofing Company, Canton, Ohio, for a copy of their metal ceiling catalogue F, recently published. The book is of the usual oblong shape, 10 x 13 inches in size, and is composed of 112 pages, illustrated with exceptionally good half-tone engravings. It is devoted exclusively to ornamental steel ceilings and side walls, of which a large variety of handsome designs are presented in the work. Directions for ordering and applying the company's continuous metal ceilings are a useful feature of the catalogue. The styles in which the ceilings are made embrace Romanesque, German Renaissance, Empire, Colonial, Gothic and Rococo. The illustrations include ceiling and side wall plates, borders, coves, moldings, center pieces, wainscoting, foot moldings and cornices, ventilated centers and various kinds of ornaments, all of which are stamped from sheet steel. Two sets of plates showing profiles of cornices and moldings and of beam or girder covering in various styles, with dimensions, give a good idea of the possibilities of sheet metal ornamentation in interior finish. The company also manufacture stamped metal emblems for churches and meeting places of fraternal societies. A price-list applying to catalogue F accompanies the book.

TIN PLATE FOR EXPORT?

A special to the New York Times from Pittsburgh, dated July 17, says: The vote now being taken by the Amalgamated Association of Iron, Steel and Tin Workers will probably result in the acceptance of the change of agreement asked by the American Tin Plate Company, one of which is that the men in some of the mills accept a reduction of 25 per cent. on labor entering into the manufacture of tin plate for export. There is some doubt as to what the attitude of independent tin plate mills will be.

A proposition was formulated which is now being considered by the tin workers, providing for a 25 per cent. reduction on all labor entering into export tin plates. The association is advised that if its members accept this reduction the American Tin Plate Company will immediately receive orders for about 1,500,000 boxes of tin plate per year, which is now supplied from abroad. The wage scale on domestic tin plate will remain the same and the price of the material consumed in this country will also remain unchanged. By the reduction in wages the American Tin Plate Company will be in a position to meet the prices of the foreign mills.

COOLING A ROOF.

BY D. S.

Some readers of *The Metal Worker* probably will be interested in the method I adopted for satisfying a customer who desired to have the part of a building immediately under the tin roof made cooler, owing to the illness of the occupant of one of the rooms. Between the ceiling of the room and the roof was a small air space, which is quite generally provided in the construction of buildings, but it was insufficient to prevent the heat of the roof making itself very perceptible in the chamber beneath. As the work had to be done quickly and without any damage to the roof already in place, a makeshift was resorted to. I purchased some thick, soft, open texture wrapping paper, covering the roof with six thicknesses of this material. Above this I laid 1-inch boards about a foot or so apart, and on the top of these two more thicknesses of the soft paper. On top of this again I laid 1-inch boards close together and weighted them so as to prevent any danger of their being blown off. I then arranged for connecting a hose with the house water supply at the highest point in the building so that the entire roof could be wet down to further counteract the heat of the sun. The effect not only reduced the temperature of the room several degrees, but also produced a benefit that satisfied my customer and had a substantial influence upon the convalescence of the patient.

Roofing Materials Catalogue.

The Galesburg Cornice Works, Galesburg, Ill., are sending out a 32-page illustrated catalogue and price-list of the architectural sheet metal goods and sheet metal specialties which they manufacture. Among the goods shown are molded face roof gutters, galvanized steel eave trough, miters, eave trough ends, corrugated conductor pipe, galvanized elbows and shoes, galvanized steel gutters, cut offs and strainers, wire conductor hooks, eave trough hangers, ridge roll, ridge cresting, V ridge cap and the adjustable hip shingle, together with finials and vanes in large variety, also the Galesburg skylights, recently illustrated and described in these columns. The firm are also large jobbers of tin andterne plates, galvanized steel sheets, furnace pipe and fittings, hot air registers, solder, sheet zinc, elastic roofing cement, asbestos furnace cement and asbestos paper for hot air or steam pipes. The last few pages of the publication are devoted to tables of sizes and weights of various roof coverings, also directions for obtaining diameters, circumferences and areas, and a table of relative value of nonconducting materials, with approximate weights of various roof coverings and skylight glass, also one of weights of galvanized iron. The publication will be found a useful work of reference for those engaged in the roofing trade.

FLASHINGS.

L. M. Ekin has been appointed secretary of the Huntington Tin & Planished Plate Company of Huntington, W. Va.

THE growing scarcity of cedar wood, of which cigar boxes are usually made, has suggested the use of Tin Plate for the manufacture of these boxes as a substitute for the cedar wood. It is reported that already some cigar boxes have been made from Tin, which have proved very serviceable packages. This departure, if widely followed, will open up a large new field for the use of Tin Plate.

THE LAUGHLIN TIN PLATE PLANT, at Wheeling, W. Va., was closed down on Monday for ten days for the purpose of overhauling and making certain necessary repairs.

EXPERIMENTS are being carried out at the works of the Berger Mfg. Company, Canton, Ohio, for the production of Enameled Metal Shingles for roofing purposes. Some of these Metallic Shingles have already been turned out and are regarded as very satisfactory. The manufacturers believe they can produce and sell them cheaper than Slate.

THE R. R. MABIE ROOFING COMPANY of New York City have been incorporated with a capital of \$25,000 by R. R. Mabie, George Baum and O. A. Samuel.

M. J. HYLAND, Middletown, Conn., has the roofing of the new factory which is being erected at South Farms by the New England Enameling Company.

It is reported that the erection of a ten-mill Sheet Steel plant will be begun at Apollo, Pa., this summer. The industry, it is said, will be backed by Pittsburgh and Apollo capitalists who are experienced men in the Sheet manufacturing industry. The plant will be built in the most modern manner, and equipped to turn out the finished product from the raw material. A tract of 5 acres lying between the river and the railroad has been selected as the site of the new plant.

THE HUMBERT TIN PLATE WORKS of the American Tin Plate Company, at South Connellsville, Pa., have been closed down for three or four weeks for the purpose of repairs and overhauling.

THE new plant of the Jackson Iron & Tin Plate Company, at Clarksburg, W. Va., which has just been completed at a cost of \$500,000, is starting off under the most favorable auspices. The company already have a large volume of orders on their books, which will suffice to keep the works busy for many weeks to come.

THE LION TIN PLATE WORKS, at Nantyglo, Monmouthshire, England, consisting of eight mills, are to be offered for sale at public auction.

THE LA BELLE plant of the American Tin Plate Company, at Wheeling, W. Va., consisting of ten mills, has been closed down for its usual summer overhauling. All the old furnaces which have been torn down are being rebuilt, and a number of other improvements and repairs are being carried out during the shut down.

At the bimonthly settlement of the Sheet and Tin Plate scales at Pittsburgh last week it was found that the average prices of shipments of Sheets and Tin Plate in May and June did not warrant any advance in wages to the men in July and August. At the bimonthly settlement of the Bar Iron scale in Youngstown, Ohio, last week it was found that the average prices of shipments of Iron Bars in May and June warranted an advance of 25 cents to puddlers and 2 cents to finishers for July and August. Puddlers are now being paid \$6 a ton, the highest wage for many years.

It is reported that the American Sheet Steel Company have placed a contract with Kelley, Walker & O'Neil for putting in 20 new gas wells in the fields surrounding Indianapolis. The gas plant at Muncie is very much in need of a larger gas supply, and it is said that the company will not be able to operate this coming winter if the supply is not increased. They have a pumping station at Bethel, but the supply is inadequate to meet their requirements. The contract for the wells is estimated at about \$20,000.

THE new Tin Plate plant of the Pope Tin Plate Company, at Steubenville, Ohio, has been partially started, 7 of the 12 mills now running on Black Plate. The other five mills will be started in about a month. This is said to be one of the best equipped Tin mills ever built, the mills and engines being extremely heavy.

GEO. E. DAY has been appointed secretary and general sales agent of the Youngstown Iron, Sheet & Tube Company, succeeding W. H. Foster.

THE retirement is announced of Col. George D. Wick from the presidency of the Youngstown Iron, Sheet & Tube Company of Youngstown, Ohio. Colonel Wick, who is in Europe, retires on account of his health. The stockholders of the company will meet next week to elect his successor.

REPAIRS are about completed at the New Castle, Pa., plant of the American Tin Plate Company. The mills there will shortly resume operations.

IN addition to those reported in our issue last week, the following named concerns have signed the Amalgamated Association scale: American Rolling Mill Company, Middletown, Ohio; Ewald Iron Company, Louisville, Ky.; Washington Charcoal Iron & Tin Mills, Washington, Pa.; Parkersburg Iron & Steel Company, Parkersburg, W. Va.; Republic Works of the National Tube Company, Pittsburgh, Pa.; Kittanning Iron & Steel Mfg. Company, Kittanning, Pa.; Tuscora Steel Company, Newcomerstown, Ohio; South Sharon Tin Plate Mill, South Sharon, Pa.; Waukesha Sheet Steel Company, Waukesha, Wis.

Proposed Bar Mill Consolidation Abandoned.

THE active competition which has resulted in the sale of bar iron under 1.75 cents has been the motive for a determined effort to consolidate most of the independent bar iron mills in the Central West. A company was projected recently with a proposed capital of \$6,000,000 to embrace nine of the leading bar mills in the section named. It is claimed that with the best mill practice, the present prices of scrap and bar iron would allow no profit. In fact, there would be an actual loss in selling bar iron at 1.75 cents and under. It was hoped that by consolidating the mills referred to, better control of the market could be exercised, and sales of the finished iron be made only on a profitable basis. Therefusal of some of the leading mills to enter the proposed combine, however, caused the abandonment of the plan this week, and it is thought that no further effort will be made to bring about a consolidation. Possibly, some agreement as to selling prices may result from the agitation.

THE ROBERTSON MFG. COMPANY, 203 West Utica street, Buffalo, N. Y., are sending to the trade a little pamphlet showing illustrations of the various styles of the Hero Grinder, adapted for foot or hand power, or for belt connection to power apparatus. The various Grinders are adapted for sharpening tools, skates, for family use, and for sharpening mowing machine knives. The catalogue also shows the Hercules Tap Wrench and Robertson's New Sensitive Bench Plane. Two pages are devoted to the Robertson Germ Proof Automatic Cleaning Filter, a new device that can be thoroughly cleansed, by simply reversing the flow of water through it. Other goods presented are the Eclipse Horse Singer and the Reizal Gas and Gasolene Engines.

SIDNEY SHEPARD & Co. of Buffalo have filed plans for the erection of a \$45,000 building in Buffalo, where the company now have two plants. The company manufacture Sheet Iron Goods. The new building will be a six-story structure, and it is understood the company's business will be concentrated in it on completion.

THE UNITED STATES ASBESTOS COMPANY of Portland, Maine, have been incorporated, with a capital stock of \$500,000, to mine and deal in Asbestos in all its forms. The officers of the company are: G. S. Jones, Boston, Mass., president, and J. C. Wood, Portland, Maine, treasurer.

THE LETTER BOX.

Inquiries in regard to practical questions of general interest are invited, in reply to which we shall be glad to receive suggestions and information from our readers.

Correspondents are requested in all cases to give their names and addresses, which will not, however, be published or disclosed without their consent.

PATTERN FOR ROUND FLUTED FINIAL TOP.

From G. A. B., Redlands, Cal.—Will you please let me know, through the columns of *The Metal Worker*, how to obtain the patterns and construct the finial top,

center in plan, draw the horizontal line D E, upon which place the stretchout of the section 1 7, as shown by similar figures on E D, through which, at right angles to E D, draw lines which intersect with lines drawn parallel to D E from intersections on the miter lines *a* and *b*. Trace a line through the points thus obtained, as shown by F G H, which will be the pattern for one of the body sides. These sides should be soldered together, and the neck B in section attached to it.

This part or body being completed, the raising work which follows depends more upon the skill of the workman than upon the patterns, which are merely flat strips of metal which are raised or stretched to the desired shape. The practical method for obtaining these bead patterns is as follows: For the small bead A, a flat strip

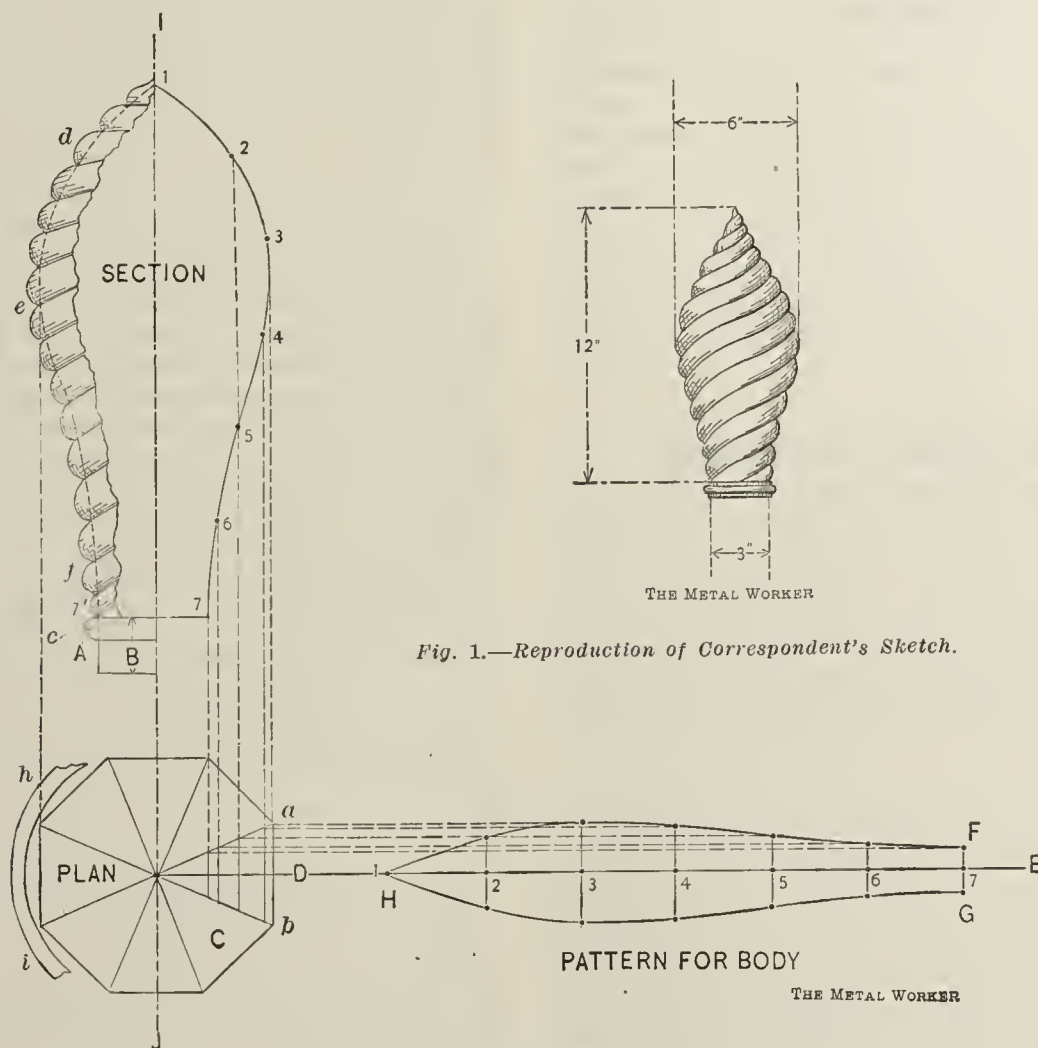


Fig. 1.—Reproduction of Correspondent's Sketch.

Fig. 2.—Plan, Section and Pattern.

PATTERN FOR ROUND FLUTED FINIAL TOP.

a sketch of which I send herewith? I have two of them to make, and should like some help on them.

Answer.—In Fig. 1 is shown a reduced view of our correspondent's sketch, which shows a circular finial top, the neck of which is 3 inches in diameter, the height 12 inches and the diameter at its widest point 6 inches. In this connection it may be proper to remark that these tops can be bought ready made from zinc ornament manufacturers and are turned out in various sizes. We presume, however, that our correspondent knows this, but wants to know how to construct one by hand.

These tops are usually stamped by machine in two halves and are made of zinc or copper, having no body on the inside. In making these tops by hand, a body is first constructed around which the small beads are drawn in spiral shape, as shown.

In Fig. 2, let 1 7 7' represent a section of the body and C the plan of the same placed in its proper position, as shown by the center line I J. In this case, the plan has been divided into an octagon; in practice more spaces should be employed which will bring the body nearer to a true circle. Divide the half section 1 7 into equal parts, as shown from 1 to 7. From these points drop vertical lines intersecting the two miter lines drawn from the corners *a* and *b* to the center. From the

of metal is used, in width equal to the stretchout of the bead and in length equal to the amount required for the circumference of the 3-inch neck. If a larger bead were required for a larger top, the bead A would have to be made in two flaring sections with the seam at *c*.

For the patterns for the beads, forming a spiral over the body, as shown in Fig. 1, it is usual to use a piece of crayon and mark the width and pitch of the beads on the body, after which strips of paper are cut which will wind around the body following the crayon lines on the body, and adding to either side of the center line on the paper the amount it would require to hammer up the bead. Then the beads are hammered to the required shape, drawing them around the corners of the body, as shown by *h i* in plan, and *d e f* in section, in Fig. 2. As before mentioned, much depends on what skill the workman has with the hammer.

COPPER FOR SMOKE PIPE.

From I. M. J., Baltimore, Md.—In reply to the inquiry of "W. J." in *The Metal Worker* of July 12, I would say I do not know anything about the durability of copper smoke pipe, but I do know a good deal about the durability of copper reservoirs in cooking stoves, which have been largely used in the country districts

of the South. Where these reservoirs have been made of sufficiently thick copper they wear out from the inside rather than corrode through from the outside. The conditions here are frequently a reservoir full of cold water, sometimes a wood fire and sometimes a coal fire in the stove, and with the products of combustion thrown around the copper vessel or along one side for heating the water. The cold body of water is well calculated to induce the depositing of any of the injurious elements that the products of combustion may contain, and I should consider the conditions here much more detrimental to the lasting qualities of the copper than could be possibly produced in a pipe that would be located in the vent flue for carrying off the products of combustion and heating the flue so as to induce an inside draft for ventilating purposes.

From J. L. S., New York City.—Having read the inquiry of your correspondent, "W. J.," in *The Metal Worker* of July 12 in reference to the use of copper for smoke pipe, I would say that its durability and usefulness depend largely upon the weight of the copper used and the method of supporting it in the flue. I assume that the pipe would be of comparatively large diameter, in which case, in my opinion, copper of less weight than 20 ounces should not be used. If copper of sufficient weight is used and is supported so that it will not buckle, there will be little trouble from creosote or any of the other deposits from the products of combustion which must pass through it.

SOLDER COOLS ON BRASS.

From O. R. T., Waverley, Iowa.—I am a new beginner at joint wiping and would like to know why it is that I cannot wipe a joint on a brass soldering nipple. I can wipe a good joint in joining lead to lead, but when I try to wipe a joint connecting lead to a brass nipple the solder gets hard on the brass before I can wipe it. The lead end to the joint I can get all right, but the brass end I fail on. I would like to have *The Metal Worker* or some of its readers tell me the reason for my failure.

Answer.—The difficulty of wiping clean edges on joints with one or both ends of brass is experienced by every plumber and is very discouraging to the beginner, principally because he cannot form and wipe the joint quickly enough to be successful, even when everything has been done to counteract the cooling of the brass edges. Unequal conduction of heat is the base of the trouble, but is not always the specific cause of failure aside from lack of skill on the plumber's part. The conductivity of brass for heat is given as 0.24; lead, 0.09; tin, 0.15, when compared with silver as 1. Assuming the solder to be half and half wiping, and its conducting power 0.12, a mean of the tin and lead, with the lead at 0.09, the whole trouble appears to be the heat running on the brass. This may be true, but the heat is not always running into, along and away from the joint, for, in the case of extra heavy supply pipe being wiped onto a common brass solder nipple and the nipple held in place by a pine stick, there is no place for a great amount of heat to run. It cannot run off at the end beyond the rate of radiation and the loss of heat by radiation from the general surface of the nipple is too slow to account for the evident loss of heat in some manner. This loss is satisfactorily accounted for on the assumption that the heat runs back into the lead pipe out of the brass, causing the same effect on the edge of the joint as though the heat continued to be conducted away from the joint into brass.

This assumption apparently admits a paradox, because a slower conductor should prevent the heat running out of the brass. It would, if the area of contact was small, but there is the actual contact with the brass of the lead pipe capable of conducting the heat about one-third as fast as brass. This surface is more than quadrupled by the solder contact of the joint, with the conducting power of the mass of solder at about half that of brass, the solder being in contact with both the lead pipe and the brass and the area of the cross section of the pipe being much greater than that of the

brass. These conditions alone are amply sufficient to rob the brass of more heat than usually suspected, and when it is remembered that tinning by pouring wiping solder on leaves a tinning of almost pure tin on account of the tin giving up its heat readily and chilling in contact with the poorer conducting surface, it will be seen that the heat can be transferred to the pipe at a rate insuring trouble, even when the brass is short. When the brass end is long the heat is lost by conduction both ways.

Knowing what is to be contended with, it is easy to do all that can be done to help the wiper. The brass end should be pasted with paper to keep the heat from being taken up by the overlapping solder when forming the joint. The pasting need not be so wide as to interfere with solder being poured out on the brass to heat it while getting up the heat, but the surface outside of the pasting should be soiled if the brass is new. The lead must be soiled outside of the cleaning so that solder can be poured out on the pipe liberally. A mass of solder poured back on the lead a few inches from the joint helps to hold the heat in both edges of the joint. If the brass is a faucet, pour on the bibb end. This will steady the brass and feed heat toward the joint. If the brass is a stop cock prepare to wipe both ends at once, making half the heat or more on one end, then on the other, leaving a mass of solder on the second end. Next wipe the joint on the end first poured on, finishing the other end immediately before the first joint gets cold. If the joints are upright finish the upper one first. If the brass is a pipe of some length, pour a mass of solder out and along the pipe, beginning at least 2 inches from the joint. Pour heavily on the brass part of the cleaning. Let the solder mass and extend over the ends of the cleaning alternately. Pour down to the brass when working on the brass end. Take a full ladle of hot solder at the last, pour the mass down and replace it once or twice; then, with enough on the cloth and pipe together to make the joint, pour the brass end clean next to the pasting and pour over it until the ladle is nearly empty. Then finish pouring on the lead end. This takes about half a minute on ordinary joints. When ready to make the joint, form it before cutting the edges down with the cloth. Cut the edge on the lead end down first. Keep the hottest solder twisted over to the brass end when forming the joint. Wipe quickly. If these directions are followed little trouble should be encountered with the brass end of a joint.

The collapse of the famous Campanile at Venice is a most regrettable occurrence. This bell tower formed one of the most striking of the numerous monuments of antiquity in the Queen City of the Adriatic. The most unfortunate part of the thing, however, is that, in the opinion of scientific men, the fall of the tower is simply a forerunner of the ultimate destruction of many of the historic buildings in Venice. Professor Wagner, the city architect, believes that practically the whole of the city is doomed to destruction. He says that the subsoil has deteriorated, and that the piles and pillars which form the foundations of the buildings are rotting and will shortly be unable to stand the pressure upon them. Sinking has been observed in the subsoil for many years. Nevertheless, the City Council has decided to rebuild the Campanile on St. Mark's Square.

In the New England district of New South Wales, Australia, it is said there are enormous deposits of zinc in lodes from 40 to 50 feet wide, containing zinc ore in combination with copper, silver and lead. The existing reduction works are unable to treat the ore, but under the stimulus of the bonus which the Australian Government proposes to give for the production of spelter a marked development in the industry is looked for.

D. H. Jack of Bradford, Pa., and associates are reported to be organizing a company to pipe natural gas from the Pennsylvania fields to Elmira, N. Y.

It is stated that the Standard Oil Company will build in England a fleet of 12 steamships, of 40,000 barrels capacity each.

TRADE REPORT.

MARKET SUMMARY.

Pig Tin is exceedingly quiet, and about $\frac{1}{4}$ c. higher.
Copper is weak and dull.
Pig Lead continues dull and steady.
Spelter is about $\frac{1}{8}$ c. higher, with better demand and continued scarcity of stock.
Antimony is slightly lower in price, and quiet.
Nickel is in good demand and without change in price.
Aluminum is firm and in good demand.
Tin Plates are quiet, with retail prices a little less firm.
Sheets are quiet, except for the heavy gauges, and the market is a little weak.
Old Metals are quiet and unchanged.
Scrap Zinc is $\frac{1}{8}$ c. higher.
Foundry Iron is very scarce and prices nominal.
Sheet Copper is in fair demand and firm in price.
Sheet Zinc is firm; demand is moderately active.
Hardware prices are strong in all lines, with advancing tendency in some, but business is quiet.
Cast Iron Soil Pipe and Fittings have been advanced in price by New York jobbers.
Plumbers' Brass Work is very active on the recent advance in prices.
Cast Iron Sinks are generally in good demand, but prices vary materially.
Hollow Ware has been marked up again in price.
Oilers are somewhat lower in price, owing to termination of manufacturers' agreement.
Building Papers are very strong and active.
Wire Nails are active and firm.
Cut Nails are in moderate demand at unchanged prices.
Linseed Oil is quiet, but firm.

METAL MARKET.

NEW YORK, July 18, 1902.

Pig Tin.—The stock of Tin on hand in this market is under close control. Manipulators succeeded in advancing prices considerably in the early part of the week. On Thursday, however, the upward movement received a check, and there was a slight reaction, leaving as a result, prices about $\frac{1}{4}$ c. above those given in our last report. Straits Pig in small lots is quoted by jobbers at 29 $\frac{3}{4}$ c. to 30 $\frac{1}{4}$ c. per lb. The amount of actual business transacted during the week was very small, purchases for consumption being unusually light, even for this dull season of the year. Arrivals of Tin thus far this month have been small, amounting to but 872 tons. The amount afloat and expected before the end of the month is 3073 tons.

Copper.—The Copper market continues weak, and is a shade lower than at the date of our last report, there having been a steady decline during the last few days. Although offerings were very liberal, buyers have hesitated to purchase. The consuming demand at present is small. It is said that several mills are still closed for repairs. Jobbers quote Lake Ingot in small lots at 13c. per lb., and Casting Copper at 12 $\frac{1}{2}$ c. to 12 $\frac{3}{4}$ c. The monthly production for June in this country was very large and occasioned considerable comment. It amounted to 26,740 tons.

Sheet Copper.—Although the demand for Sheet Copper continues in satisfactory volume, it is hardly as large as it was a few weeks back, which is accounted for by the advance in the season. A considerable amount of Sheet Copper is going into consumption, however, and the outlook favors a continued steady demand. Prices are firm on the basis of 18c. per lb. for Sheet Copper from store.

Pig Lead.—Nothing of interest has been developed in

connection with this metal. Business is light, and prices are steadily held on the level obtaining for some months past. American Pig in small lots is quoted at 4.45c. to 4 $\frac{1}{2}$ c. per lb. St. Louis advices report no new features in the Pig Lead market at that point, affairs continuing in a quiet, dull condition without any change in quotations.

Spelter.—The market for Spelter is stronger than ever and prices have made a further advance. Spot stocks continue scarce, with a fairly active demand and good inquiries for August and September delivery. Consumers are said to be fairly well supplied for immediate requirements, but none of them have any stock on hand to speak of. The producers also claim to be rather bare of stock, although it is reported in the trade that some good sized offerings have been made for early delivery. Jobbers are quoting good Western brands in small lots at 6c. to 6 $\frac{1}{8}$ c. per lb. The price of Spelter has not been as high as it is now in over two years. St. Louis advices indicate the continuance of heavy transactions in the Spelter market, with a considerable increase in prices.

Sheet Zinc.—The demand for Sheet Zinc is of ordinary proportions. Prices are firm at 6 $\frac{3}{4}$ c. per lb. for 600-lb. cask lots and 7 $\frac{1}{4}$ c. to 7 $\frac{1}{2}$ c. for smaller quantities.

Antimony.—There has been a slight decline in the price of Antimony, with a light demand. Prices were steady at the close at 10 $\frac{1}{2}$ c. to 10 $\frac{3}{4}$ c. per lb. for Cookson's in small lots, 8 $\frac{3}{4}$ c. to 8 $\frac{7}{8}$ c. for Hallett's and 8 $\frac{1}{2}$ c. to 8 $\frac{3}{4}$ c. for other brands.

Nickel.—This metal is unchanged. Small lots are quoted at about 5c. per lb.

Aluminum.—The demand for Aluminum continues active and prices are without change. Small lots of No. 1 Ingot, guaranteed 99 per cent. pure, are quoted at 37c. per lb. and 100-lb. lots at 35c.

Tin Plates.—Nothing new has been developed in this market, which continues quiet with an absence of any large business. The retail trade also shows the influence of summer dullness in a falling off in the number of small orders. Prices in the general market are unchanged, but more liberal deliveries from the mills have resulted in the withdrawal of some of the outside prices asked by jobbers during the winter and spring. Thus Bright Charcoal Plates in this market now rule about 25c. a box lower than they did a while ago, and ordinary Terne Plates are also now quoted at about a similar reduction. Jobbers quote American Bessemer Coke Plates, 1C, 14 x 20, in moderate sized lots, delivered in New York or corresponding points, at about \$4.75 to \$4.90 per box. Cable advices report a further decline of 1 $\frac{1}{2}$ pence in the price of Welsh Plates, the quotation now being 13 shillings 3 pence, f.o.b. Swansea.

Sheets.—The Sheet market generally is rather quiet, the demand for Light Black Sheets and Galvanized Sheets being particularly dull. The tone of the market is weak, notwithstanding that the heavier gauges of Black Sheets continue in good demand, and most of the mills are still behind in their shipments. A good many Sheet mills are closed down for repairs, &c., and the output has been cut down materially. This may have the effect of putting the market in better shape before long. Retail prices in the Eastern market are rather lower on both Black and Galvanized Sheets, the quotation on No. 27 One Pass Cold Rolled Soft Steel Sheets now being at about 3.70c., and on No. 24 Galvanized at 4c. to 4.10c.

Chicago advices are as follows: The market has continued slow and easy for Light Sheets, but Heavy Sheets are steady. Quotations are unchanged. No. 27 Black Sheets in small lots from store are quotable at 3.45c. to 3.55c., and Galvanized Sheets, small lots from store, at 4.70c. to 4.75c. for No. 27.

Old Metals.—Although the demand for Scrap Metals is not very active, prices remain fairly firm through the

list, and are unchanged, except for Scrap Zinc, which is $\frac{1}{8}$ c. higher, owing to the high price of raw Spelter. Dealers are paying about the following rates for moderate sized lots, delivered at New York or corresponding points:

Heavy Copper.....	per lb.	10 c.
Light and Tinned Copper.....	per lb.	9 c.
Heavy Brass.....	per lb.	8 c.
Light Brass.....	per lb.	6 $\frac{1}{2}$ c.
Lead.....	per lb.	3 $\frac{3}{8}$ c.
Tea Lead.....	per lb.	3 c.
Zinc.....	per lb.	3 $\frac{1}{8}$ c.
Pure Aluminum Sheet.....	per lb.	22 c.
Cast Aluminum.....	per lb.	17 c.
No. 1 Pewter.....	per lb.	18 c.
No. 2 Pewter.....	per lb.	9 c.
Tin Plate Scrap, per gross ton.....		to \$5.00
Wrought Iron Scrap, per gross ton.....		\$13.00 to 13.50
Heavy Cast Scrap, per gross ton.....		12.00 to 12.50
Stove Plate Scrap, per gross ton.....		8.50 to 9.00
Burnt Iron, per gross ton.....		7.00 to 7.25

THE PIG IRON MARKET.

NEW YORK.—The scarcity of Pig Iron for early delivery has become more acute through the continuance of labor troubles. The Birmingham furnaces, which were banked, are expected to resume at an early date. There are further reports of sales of foreign Iron. It is difficult to quote American Pig Irons for nearby delivery, and the following figures are nominal: Northern Iron, at tidewater, No. 1 X, \$23.50 to \$25; No. 2 X, \$22.75 to \$23.50; No. 2 Plain, \$22.25 to \$22.50. Tennessee and Alabama brands are quoted as follows: No. 1 Foundry, \$22.50 to \$23.50; No. 2 Foundry, \$21.75 to \$22.50; No. 3 Foundry, \$21.25 to \$21.75.

CHICAGO.—Continued demand for Iron for next year's delivery is the leading feature of the market, but the center of activity has been transferred to the Southern companies, although Northern Iron is still in demand. No very large sales have been made during the week, but between 20,000 and 25,000 tons have been sold on the basis of \$17, Birmingham, for No. 2 Foundry, the deliveries extending from January to June, 1903. Large buyers, including the stove foundries, have been making urgent inquiries for lots of 2500 to 3000 tons each. A few lots of Southern No. 1 and 2 Foundry have been sold at \$24.65 to \$23.65 respectively for November and December delivery, and a few hundred ton lots of No. 1 Southern Foundry to be shipped in July have cost \$25.65. As a rule, however, scarcely anything is obtainable for prompt shipment, or for delivery during the current year. A further advance of \$1 per ton on Southern Iron is being considered. The following are the nominal quotations for delivery during the current year:

Lake Superior Charcoal.....	\$25.00 to \$26.00
Local Coke Foundry, No. 1.....	22.00 to 22.50
Local Coke Foundry, No. 2.....	21.50 to 22.00
Local Coke Foundry, No. 3.....	21.00 to 21.50
Local Scotch, No. 1.....	22.50 to 23.00
Oblo Strong Softeners, No. 1.....	24.00 to 25.00
Southern Silvery, according to Silicon.....	24.65 to 25.15
Southern Coke, No. 1.....	24.15 to 24.65
Southern Coke, No. 2.....	23.65 to 24.15
Southern Coke, No. 3.....	23.15 to 23.65
Southern Coke, No. 1 Soft.....	24.15 to 24.65
Southern Coke, No. 2 Soft.....	23.65 to 24.15

PHILADELPHIA.—Under such conditions as are now ruling, exact quotations cannot be expected. Every buyer and seller has his own ideas in regard to the situation, and these vary extremely; consequently, one man's price has little or no influence on what another man's price will be. Buyers, however, are not bidding quite as high figures, although Iron for quick shipment is scarcer than ever, except for something they must have at once, purchasers abstain from buying except in a small way at the figures recently quoted. Present prices for 1903 deliveries appear to be about as follows. For this year, 50c. to \$1 more, according to circumstances:

No. 1 X Foundry.....	\$23.50 to \$24.50
No. 2 X Foundry.....	22.00 to 22.50
No. 2 Plain.....	21.50 to 22.00

PITTSBURGH.—The Pig Iron market is exceedingly strong. Many of the furnaces are so short of Coke that they are not turning out more than one-half of their regular output. Several furnaces are shut down and others may have to stop any day. No. 2 Foundry Iron is quoted at \$22 to \$22.50, Pittsburgh, depending on tonnage and deliveries wanted.

CINCINNATI.—The Pig Iron market has shown but

little change one way or another during the week. The supply of Foundry Iron from any source for this year's delivery is still practically nothing. The small lots that are available are selling about as they have been for the past few weeks, on the basis of \$18 to \$19, Birmingham, for No. 3 Foundry. Northern Irons are very scarce and practically unchanged as to price. We quote, f.o.b. Cincinnati, for 1902 delivery, as follows:

Southern Coke, No. 1.....	\$21.25 to \$22.25
Southern Coke, No. 2.....	20.75 to 21.75
Southern Coke, No. 3.....	20.25 to 21.25
Southern Coke, No. 4.....	19.75 to 20.75
Southern Coke, No. 1 Soft.....	21.25 to 22.25
Southern Coke, No. 2 Soft.....	20.75 to 21.75
Oblo Silvery, No. 1.....	24.60 to 25.10
Oblo Silvery, No. 2.....	24.10 to 24.60
Lake Superior Coke, No. 1.....	25.10 to 25.60
Lake Superior Coke, No. 2.....	24.60 to 25.10
Lake Superior Coke, No. 3.....	24.10 to 24.60

ST. LOUIS.—The same quiet conditions are apparent in the Pig Iron market and the volume of new business being executed at this point is of a very light order. One sale of about 1000 tons of Southern Foundry Iron for the last half is the only order of any moment that comes to our notice this week. Furnaces are as yet reluctant to name the figure for 1903 delivery. The following is the range of prices current for cash, f.o.b. St. Louis:

Southern, No. 1 Foundry.....	\$21.50 to 23.50
Southern, No. 2 Foundry.....	20.75 to 22.75
Southern, No. 3 Foundry.....	20.25 to 22.25
Southern, No. 4 Foundry.....	19.75 to 21.75
No. 1 Soft.....	21.25 to 23.25
No. 2 Soft.....	20.75 to 22.75

CHICAGO REPORT.

Scrap Iron and Steel.—There has been a moderate movement from city yards, but the freight handlers' strike has prevented the handling of carload business. A firm tone continues, however. Dealers buy offerings in carload lots, Chicago delivery, as follows:

	Per net ton.
Country Wrought Scrap.....	\$14.00 to \$14.50
Machinery Cast.....	to 13.50
Malleable Cast.....	12.00 to 13.00
Stove Plate (free from burnt).....	to 9.50
Burnt Iron and Grate Bars.....	8.00 to 9.00
Sheet Iron and Hoops.....	8.00 to 9.00
Flow Steel.....	12.00 to 13.00
Breaking Stock.....	to 11.00
Old Rollers—whole (Iron).....	9.50 to 10.00
Old Rollers (Iron) cut in single Sheets and Rings.....	12.00 to 12.50
Old Gas Pipes and Boiler Tubes.....	12.00 to 12.50
Cast Borings.....	8.50 to 9.00
Turnings.....	12.00 to 12.50
Horseshoes.....	14.00 to 14.50

Old Metals.—Copper and Brass of all kinds have continued slow and easy, and, outside of city business, there has been scarcely any movement. Prices, however, of all kinds are well sustained. Zinc is especially firm. The following prices are being paid by dealers in this market:

	Per lb.
Copper Wire and Heavy.....	10 $\frac{3}{4}$ c.
Copper Bottoms.....	9 $\frac{3}{4}$ c.
Copper Clips.....	10 $\frac{1}{2}$ c.
Red Brass.....	10 $\frac{3}{4}$ c.
Yellow Brass.....	8 $\frac{1}{4}$ c.
Red Brass Borings.....	9 $\frac{3}{4}$ c.
Yellow Brass Borings.....	7 $\frac{1}{2}$ c.
Light Brass.....	6 $\frac{3}{4}$ c.
Pipe Lead.....	3.70c.
Tea Lead.....	3.35c.
Zinc.....	3 $\frac{1}{4}$ c.
Tin Foll.....	21 c.
Pewter, No. 1.....	18 c.
Pewter, No. 2.....	11 c.
Aluminum.....	20 c.

Old Rubber.—The market has presented few changes, but business has been confined to the city trade. Prices of all kinds are without essential change:

	Per net ton.	Per lb.
Garden Hose.....	\$25.00	.....
Air Brake Hose.....	45.00	.....
Rubber Shoes.....	.....	7 c.
Rubber Car Springs.....	.....	5 c.
Inside Bicycle Tubing.....	.....	22 c.
Outside Tubing.....	.....	5 $\frac{1}{2}$ c.
Black Rubber.....	.....	4 c.
White Rubber.....	.....	8 $\frac{1}{2}$ c.

Rags.—The market has remained nominally unchanged, business being practically suspended except within the city limits. Dealers continue to buy liberal offerings at 65 to 75 cents per 100 lbs., Chicago delivery.

Anthracite Coal.—The situation is unchanged, there being very little new business, but a fair movement on previous contracts. Following are the prices current,

subject to a discount of 20c. for shipment made during July:

	Grate.	Egg and Stove.
Chicago	\$5.75	\$6.00
Milwaukee, Wis.....	5.75	6.00
St. Louis.....	6.20	6.45
Kansas City, Mo.....	8.25	8.50

THE HARDWARE TRADE.

The midsummer season is operating against activity in business, and as a rule the volume of trade is smaller than for some time. This applies to both the manufacturer and the jobber, who agree in reporting a falling off in the number of orders which are coming in to them. The force of traveling salesmen are, however, about getting into the field and are beginning to be heard from, and there is little doubt that their activities will result in increasing the volume of business. Manufacturers are generally endeavoring to give their plants the overhauling usual at this season, but many of them find the pressure of orders such as to make it a somewhat difficult task. In connection with the repairs and cleaning up many of them are making substantial additions to their factories or otherwise increasing their facilities. There is no doubt that the prosperous conditions which have prevailed have operated in giving manufacturers in nearly all lines a materially larger capacity, and at the same time there has been the encouragement of a good deal of competition, making the aggregate output in the various lines substantially greater than it was two or three years ago. This is notably the case in lines in which there have been strong organizations or dominant interests occupying a controlling position in the market. In some of these branches of the trade the new competition which is coming into sight, and is in some lines active in the field already, promises to give the trade wider and more diversified sources of supply than has recently been the case. Whether in all these lines the demand during the coming fall will be of such volume as to keep prices where they now are is a question which is being canvassed. Up to the present time most lines of goods are very firmly held, and in only a few are there indications of a slight weakening, and under the influences referred to above. In most departments of the trade the high price of material is giving strength to the market, and in a number of minor goods higher quotations are announced. The strikes which command public attention have a perceptible effect in diminishing the volume of business, not only by their direct influence in interfering with trade, but in the uneasy feeling which they occasion, from which there results an indirect loss which is perhaps equally serious. Reports from the crops leave no doubt that the harvest as a whole will be most abundant, and in this fact, coupled with the existing wonderful prosperity, there is found basis for the confident anticipation of a heavy trade during the remainder of the year.

NOTES ON PRICES.

Cast Iron Soil Pipe and Fittings.—Under date of July 14 the jobbers of Plumbing Supplies in the territory of Greater New York have advanced the price of Cast Iron Soil Pipe and Fittings. The advance on the sizes from 2-inch to 6-inch is in accordance with the change made on July 1 by the manufacturers and amounts to an increase of 5 per cent. The change on the larger size of Pipe and Fittings is much more in excess of the manufacturers' change in cost and amounts practically to an advance of 20 per cent. from the previous quotations governing sales in this territory. The scarcity of Cast Iron Soil Pipe and Fittings has had more to do with the advances made by the jobbers than the advance which the manufacturers put into effect on the first of the current month. A report which comes from an authoritative source this week is to the effect that the manufacturers of Cast Iron Soil Pipe and Fittings are again about to make a change. It would not be surprising to hear that the advance will be greater than the previous one, as the manufacturers are put to their wits' end to procure the raw material for their plants.

The present retail prices on Soil Pipe and Soil Pipe Fittings in New York are as follows:

	Discount.
2 to 6 inch Standard Pipe.....	50 %
2 to 6 inch Extra Heavy.....	60 %
2 to 6 inch Standard and Extra Heavy Fittings.....	65 %
Larger sizes Pipe and Fittings.....	40 %

Plumbers' Brass Work.—The advance in the price of Plumbers' Brass Work, which took effect on June 23, is being adhered to by all manufacturers in and outside of the association. It is said that never before has there been such a scarcity of Brass Work, and that this is the first time the manufacturers are making a respectable profit on their output. The jobbers are covered for all their supplies, but they cannot procure the goods from the factories as the manufacturers are getting better prices for prompt deliveries from many of the jobbers who were uncovered for their wants and are now buying from hand to mouth to fill orders. Orders of this character always command higher prices than do stock orders which are placed with the manufacturers during the dull seasons. The business this year surprised the jobbers and manufacturers alike. Very few of them anticipated such good business as is being done, and they were not found in readiness to handle it now that it is here. Prices are higher than they have been at any time during the past four years. Stocks with the jobbers were never so small, and the season is now at its height. Everybody is demanding immediate shipment, and goods are being sold at profits which are satisfactory alike to the manufacturer and jobber.

Plumbers' Supplies.—At the joint meeting of the Central Supply Association and the Association of Manufacturers and Jobbers of Plumbers' Supplies, which was held at Niagara Falls, N. Y., on June 24, 1902, the following charges for boxing and packages were agreed upon and adopted:

Earthen Ware, Marble and Copper Boilers, at manufacturers' rates.

Minimum charges on other packages as follows:

Bags, 10 cents, net; kegs, 15 cents, net; barrels, 25 cents, net; boxes 24 x 18 x 12 inches, or equivalent dimensions or smaller, 15 cents, net; larger boxes at 10 per cent. on the cost.

All of the jobbers holding membership in the above named associations are to charge the foregoing prices.

Cast Iron Sinks.—The market for Cast Iron Kitchen Sinks is characterized by some irregularities. The manufacturers are quoting independently of any agreement, and prices are considerably divergent although inclined to advance in most cases. There is a scarcity in some of the leading sizes, and most of the manufacturers are considerably behind their orders.

Hollow Ware.—A further advance has been made in Stove Hollow Ware, and the market is characterized by a decidedly firm tone.

Oilers.—The agreement between the manufacturers of Oilers, Brass, Zinc, &c., has terminated, and the market is now an open one. Somewhat lower prices are being announced, but no very serious irregularity has as yet developed.

Casters.—The manufacturers of Casters have recently been withdrawing some of their extreme discounts, and the market is accordingly slightly higher, and is characterized by a firm tone.

Building Papers.—The market for Building Papers, both in Tarred Felt and Rosin Sheathing, is very strong, in consequence of the shortness of the supply of these materials. The demand for this material has been unusually heavy this season and the manufacturers have been unable to promptly fill all the orders they have received. It will take some little time before they come abreast of their deliveries on orders, but there are already indications of a decline in the demand as the season advances, which will enable the makers to more readily meet the wants of their customers.

Mica.—Eugene Munsell & Co., 218 Water street, New York, have issued a new price-list covering all sizes of selected North Carolina and Wyoming Mica. The market for Mica is active and prices rule firm.

Wire Nails.—The demand for Wire Nails in the New York market is somewhat beyond what is usually ex-

pected at this season. Quotations remain unchanged at \$2.30 per keg for small lots of Wire Nails from store.

Cut Nails.—Cut Nails are in moderate demand at this point, and at the prices ruling for some weeks past. Small lots from store are quoted at \$2.30 per keg. The scarcity of Iron Cut Nails still continues.

Linseed Oil.—The demand for Linseed Oil at present is very small, but prices remain firm and unchanged, City Raw in small lots being quoted at 68 to 68½ cents per gallon. There is a report current that the price of Oil will be forced up during August, but this is very problematical, as the supplies are rather above the average. Indeed, good authorities claim that the outlook favors lower rather than higher prices.

TRADE NOTES.

THE STAR ALUMINUM COMPANY, with factory at Doylestown, Ohio, have been reorganized and will increase their capital to \$25,000. The company have obtained offices in the Akron Savings Bank Building, Akron, Ohio. The company are putting in new machinery for the manufacture of Aluminum Castings and Novelties. The officers of the concern are: J. Keller, president; A. W. Clapper, secretary and treasurer, and J. A. Hernan, superintendent.

UNITED STATES CONSUL-GENERAL C. E. TURNER, at Ottawa, Canada, reports that the General Electric Company are establishing a plant in that city for the manufacture of Mica. They have leased the large factory formerly occupied by the Ottawa Porcelain Company and will employ about 150 hands at the start, and about 400 in the near future.

THE AMERICAN ALUMINUM ASSOCIATION will hold their annual meeting in Pittsburgh, Pa., the second or third week of September.

THE HERRON & BURY MFG. COMPANY, Erie, Pa., issue a little pamphlet devoted to Air Compressors, Tanks and equipment, containing dimensions and particulars.

A stock company have been organized in Detroit, Mich., with a paid-up capital of \$20,000 to manufacture Galvanized Iron Tanks and Steam Cooking Stoves. The factory of Freeland & Sons of Middlebury, Ind., was purchased by the company, and the buildings will be moved to Detroit, thus securing better shipping facilities. The factory will employ about 75 hands.

A two-story building of brick and stone, 47 x 162 feet, is under course of construction by the Elkhart Brass Mfg. Company of Elkhart, Ind. Brass, Iron and Wooden Specialties will be manufactured, and the company anticipate the opening of their factory by September. The company consist of A. E. Hansen, president and manager; W. H. Anderson, secretary, and F. A. Reed, treasurer.

THE NATIONAL SPECIALTY MFG. COMPANY, Philadelphia, Pa., have issued a new catalogue relating to Sausage Stuffers, Lard Presses, Measuring Pumps, Coffee, Spice and Drug Mills, Measuring Faucets, Fruit Presses, &c. These goods are illustrated in the colors in which they are actually finished, which greatly enhances the value of the catalogue.

THE ENTERPRISE ENAMEL COMPANY, Bellaire, Ohio, have issued a catalogue of second grade Enameled Ware. The company advise us that they are moving old machinery and installing new presses in a substantial brick and stone building adjoining their present works, which will double their capacity. Another building of the same character is contemplated, which will give much needed space in their pressrooms.

THE GOODWIN & KINTZ COMPANY, Winsted, Conn., are sending out their catalogue No. 20, pertaining to Gas and Electric Portables and Newels. These high grade goods are illustrated in a variety of attractive forms. The company also produce Mirrors, Vases, Clocks, Candelabrum and Candlesticks, Five o'Clock Teas, Photograph Frames, Premium Goods, &c.

In a report regarding the demand for Hardware, &c., in Turkey-in-Asla, United States Consul Thomas H. Norton, at Harput, writes that the use of Enameled Ware

for kitchen and household use in general is steadily increasing in that country. He finds, however, a marked dissatisfaction with the poor grade of coating on the Enameled Utensils of European make. It is said that they render but a very limited service, while enameled vessels of any size are totally lacking in that market. The Consul expresses himself as ready to facilitate the efforts of American manufacturers of Enameled Ware who care to make any efforts toward introducing their goods into his district.

JOHN P. SCHAFER, a prominent heating contractor, of Pittsburgh, Pa., was one of the visitors at *The Metal Worker* office this week. Although Mr. Schaffer installs all kinds of heating plants, he has made a specialty of Hot Air Furnace heating, and has invented a number of Furnace specialties, his latest being a Combination Gas and Coal Furnace, which has been through the test of one winter, increasing its popularity with those who have used it.

S. C. McCOWAN, superintendent of the Indian School at Chilocco, Oklahoma, will receive bids until July 28 for two 200 horse-power Boilers, two Pumps, Steam Traps, Fans, Iron Pipe and Fittings, Pipe Covering and Valves for use at the school during the year.

CONTENTS.

Editorials—	PAGE.
Correspondents Must Give Their Addresses	33
The Johnstown Mine Calamity	33
Progress of the Workingman	33
A Year's Foreign Commerce	34
In the Furnace Market	34
A Stove Captain Needed	35
Anent Hard Knots in Furnace Heating	35
The Portsmouth Stove & Range Company	35
Foundry Costs	36
The Standard Hot Air Furnaces	37
The Faultless Ranges	37
The International Furnaces	37
A Canadian Stove Catalogue	37
The Independent Stove Pipe Radiator. Illustrated	38
Stove Founders' and Metal Workers' Agreement	38
Odd Plates	38
Marvel Nutmeg Grater	39
American Wonder Raisin Seeder. Illustrated	39
Roasting and Carving Rack. Illustrated	39
Fishermen's Equipment	40
Side Lift Cold Blast Lantern. Illustrated	40
The Tokheim Measuring Pump. Illustrated	40
Keeping Track of Contracts and Jobs. Illustrated	41
A Sample of Trade Protection	43
Turner Double Jet Gasoline Torch. Illustrated	43
Domestic Gas Water Heaters. Illustrated	44
A New Steam Goods Catalogue	45
The Holden Combination Water Heater. Illustrated	45
The International "F" Series Boilers. Illustrated	46
Robertson's Filter. Illustrated	46
Chandler Pump Catalogue	46
The American Radiator Company's New Publications	47
Steam Fitters' Trade Resolutions	47
The British Tube Association Re-established	48
The American Radiator Company's New Boiler Plant	48
New Valve Factory	48
Pierce Boilers and Radiators	48
New York City Notes	48
Lynn Master Plumbers' Banquet	49
A Plumbing Goods Catalogue	49
Outing of Bronx Plumbers	49
Brooklyn Master Plumbers' Outing	49
Old Sanitary Theories Assailed	50
Heating and Plumbing Notes	50
New Firms and Changes	51
The No. 33 Gasoline Torch. Illustrated	51
The Sheet Trade	52
Correct the Formula	52
The Amalgamated Association	52
Pattern for Scale Scoop. Illustrated	52
The Tin Plate Trade	53
Soldering a Strainer on a Well Pipe	53
Canton Metal Ceilings and Side Walls	53
Tin Plate for Export ?	53
Cooling a Roof	53
Roofing Materials Catalogue	53
Flashings	54
Proposed Bar Mill Consolidation Abandoned	54
The Letter Box—	
Pattern for Round Fluted Finial Top. Illustrated	55
Copper for Smoke Pipe	55
Solder Cools on Brass	56
Trade Report—	
Market Summary	57
Metal Market	57
The Pig Iron Market	58
Chicago Report	58
The Hardware Trade	59
Notes on Prices	59
Trade Notes	60
Metal and Miscellaneous Prices	61
Labor Exchange—	
Help and Situations Wanted	65

ROOFING SUPPLIES, METALS, TIN PLATES, &c.

REVISED JULY 17, 1902.

Aluminum—
No. 1 Aluminum (guaranteed over 99% Pure), in ingots for remelting.
Small lots..... \$ 37¢
100-lots..... \$ 35¢
Aluminum Sheet, B. & S. gauge.
In lots of 50 lbs or more.
Wider than..... 6-in 14-in 24-in
And including..... 14-in 24-in 30-in
Nos. 13 to 19..... \$ 42 \$ 44 \$ 47
" 20..... 44 46 49
" 21 to 23..... 46 48 51
" 24..... 48 50 53
" 25..... 47 51 54
" 26..... 47 54 59
" 27..... 48 57 62
" 28..... 48 57 64
" 29..... 49 60 69
" 30..... 50 64 77
Note.—Lots of less than 50 lbs 5¢ per lb extra.

Antimony—
Cockson..... \$ 10 1/2 @ 11¢
Hallett's..... \$ 8 3/4 @ 9¢
U.S..... \$ 8 3/4 @ 9¢

Brass, Roll and Sheet..... 30%

Conductors—
Corrugated.
Round or Square.—
Galvanized 1/2 or more, N'st'd..... 70 & 10%
" Not Nested..... 70 & 5%
" Plain Round, 1/2 or more..... 70 & 10%
Nested..... 70 & 10%
Galvanized, Plain Round, Not Nested..... 70 & 5%
Spiral Lock Seam Pipe—
Galvanized..... 60 @ 60 & 10%
Spiral Riveted.
Galvanized..... 40%
See also Elbows and Shoes; Eave Trough Miters; Strainers, Conductor.

Conductor Strainers—
See Strainers, Conductor

Copper—
Lake Ingot..... 13 @ 13 1/4¢
Casting..... 12 1/2 @ 12 1/4¢
Sheet and Bolt..... 18¢ per lb basis
Cold Rolled Sheets..... 19¢ per lb basis
Cold Rolled and Polished Sheets..... 20¢ basis
Planished Sheets..... 21¢ basis
Bottoms, Pits and Flats..... \$ 22¢ basis

Eave Trough Galvanized
Territory..... L. C. L.
Eastern..... 75 & 10%
Central..... 75 & 7 1/2%
Southern..... 70 & 12 1/2%
S. Western..... 70 & 10%
Terms, 2% for cash.

Eave Trough Mitres—
Lap or Slip Joint..... list, 25%
Elbows—Plain Adjustable—
Eastern List.
Tin..... 30%
Galvanized..... 30%
Perfect Elbows..... 40%
Stove Pipe—
Four-Piece
No. 1..... 4 1/2 5 5 1/2 6-inch.
No. 2..... .85 .70 .75 .80 1.05 per doz.
No. 3..... .60 .63 .65 .70 .80

Elbows and Shoes—
Galvanized..... 60%
Gasoline—
See Petroleum Products.

Iron Sheet—Black.
One Pass, C. R.
Soft Steel.
Nos. 14 to 16..... \$ 3.30
Nos. 18 to 21..... \$ 3.40
Nos. 22 to 24..... \$ 3.50
Nos. 25 and 26..... \$ 3.60
No. 27..... \$ 3.70
No. 28..... \$ 3.80
Russia, Planished, &c.
Genuine Russia, according to assortment..... \$ 11 @ 14¢
Do. Stained..... 6 @ 10¢
Patent Planished, \$ 11 @ A, 11¢; B, 10¢ net
Galvanized.
Nos. 14 and 16..... \$ 3.45 @ 3.50¢
Nos. 18 and 20..... \$ 3.70 @ 3.80¢
Nos. 22 and 24..... \$ 4.00 @ 4.10¢
No. 26..... \$ 4.25 @ 4.40¢
No. 27..... \$ 4.55 @ 4.70¢
No. 28..... \$ 4.85 @ 5.00¢
No. 30..... \$ 6.00 @ 6.20¢
No. 20 and lighter, 36 inches wide, 25¢ higher.

Lead—
American Pig..... 4.45 @ 4 1/2¢
Bar..... 5 @ 5 1/2¢
Pipe..... 6 1/2¢
Tin Lined Pipe..... 12 1/2¢
Block Tin Pipe..... 42¢
Sheet Lead..... 7 1/2¢
Old Lead in exchange, 3 1/2¢ per lb.

Mitres Eave Trough—
See Eave Trough Mitres.

Nickel—
Per lb..... 55 @ 60¢

Paints, Oils &c.—
Leads—
Lead, American White, in Oil:
Lots of 500 lb or over..... 6 1/2 @ 6 1/2¢
Lots less than 500 lb..... 6 1/2 @ 6 3/4¢
Lead, White, in oil, 25 lb tin pails, add to keg price..... @ 1/2¢
Lead, White, in oil, 13 1/2 lb tin pails, add to keg price..... @ 1¢
Lead, White, in oil, 1 to 5 lb assorted tins, add to keg price..... @ 1 1/2¢
Lead, White, Dry in bbls..... 5 1/2 @ 6¢
Lead, Red, bbls, 1/2 bbls. and kegs:
Lots 500 lb or over..... @ 6¢
Lots less than 500 lb..... @ 6 1/2¢

Oils—
Linseed, City, raw..... \$ gal. 68 @ 68 1/2¢
Linseed, City, boiled..... 70 @ 70 1/2¢
Linseed State and West'n, raw 67 @ 67 1/2¢

Spirits Turpentine—
In Southern bbls..... 48 @ 48 1/2¢
In machine bbls..... 48 1/2 @ 50¢

Putty—
In bulk..... \$ 2.25
In bladders..... 2.25
In cans 1 lb to 25 lb..... 2.25
In cans 1 lb to 5 lb..... 3.25

Petroleum Products—
In Barrels (Barrel Included)
Stove Gasoline..... \$ gal. 10 1/4 @ 11¢
Kerosene..... \$ gal. 12 @ 13¢
Pipe Drain..... 40%
Pipe, Spiral—
See Conductors.

Registers—
List Sept. 2, 1901.
Black Japannel..... 70%
White Japannel..... 70%
Nickel Plated..... 70%
Bronze Finishes in Imitation of Gold.
Silver, Copper or Bronze..... 70%
Electroplated in Brass, Bronze or Copper..... 70%
White Porcelain..... 60%
Solid Brass and Bronze Metal..... 50%

Roofing Material—
1 Ply Tarred Paper, \$ ton, \$31.00 @ 32.00
2 Ply Tarred Paper, \$ roll, 108 sq. ft. 55 @ 60¢
3 Ply Tarred Paper, \$ roll, 108 sq. ft. 80 @ 35¢
Slaters Felt..... \$ ton, \$35.00 @ 36.00
Roofing Pitch..... \$ bbl. \$2.50

Rosin—
Common and Good—Strainer 1.
Rosin, C. & D..... \$ bbl. \$1.57 @ \$1.60
Rosin, E. & F..... \$ bbl. 1.85 @ 1.72¢
Rosin, G. & H..... \$ bbl. 1.75 @ 1.90
Rosin, I. & K..... \$ bbl. 2.35 @ 3.00
Rosin, M. & N..... \$ bbl. 3.35 @ 3.70

Shoes and Elbows—
See Elbows and Shoes.

Slate Roofing—
f. o. b. cars, Quarry Station.
Pennsylvania:
Best Bangor, \$ sq. r..... \$3.75 @ \$6.00
No. 1 Bangor Ribbon, \$ sq. r..... 3.50 @ 3.75
Pen Argyle, \$ sq. r..... 3.50 @ 4.50
Peach Bottom, \$ sq. r..... 5.25 @ 6.35
No. 1 Chapman, \$ sq. r..... 3.75 @ 4.75
No. 1 Penna. Black, \$ sq. r..... 3.15 @ 4.15
Unfading Washington Bangor, \$ sq. r..... 3.00 @ 4.50
Vermont:
No. 1 Sea Green, \$ sq. r..... \$2.25 @ \$3.50
Purple, \$ sq. r..... 4.50 @ 5.00
Unfading Green, \$ sq. r..... 4.25 @ 5.25
Red, \$ sq. r..... 7.00 @ 11.00
Maine:
Brownville, Unfading Black.
No. 1, \$ sq. r..... \$5.25 @ 7.50

Solder—
1/2 & 3/4 guaranteed..... 10 1/2 @ 20¢
No. 1..... 17 @ 18 1/2¢
Prices of Solder indicated by private brands vary according to composition.

Soldering Fluids—
—Per Pound.—
Smaller Barrels Quainties
Concentrated Flux..... 4c 5c
Eureka Flux:
Triple Strength..... 3c 5c
Extra Concentrated..... 4c 7c
Crystal..... 2c 2c
Gedney's Fluid..... 2c 3c
Lennox Fluid..... 2c 3c
Perfection Flux..... 3c 3 1/2 @ 1c
Yager's Salts, 1 lb. bottles..... each, 50¢
5 lb. bottles, per lb., 45¢

Soldering Coppers—
Per lb..... 22 @ 24¢
Spelter—
Western Spelter..... 5 1/2 @ 6¢
Spiral Pipe—
See Conductors.
Stove Pipe Elbows—
See Elbows, Stove Pipe.
Stove Trucks—
See Trucks, Stove.

Strainers, Conductor—
Galvanized..... 50%
Tin Pigs and Bars—
Banca, pigs, \$ lb..... 30 @ 30 1/2¢
Straits, pigs, \$ lb..... 30 @ 30 1/2¢
Straits, in bars, \$ lb..... 31 @ 31 1/2¢

Tin Plates American
Charcoal Plates, Bright—
N. B.—The price of 20 x 28 sizes double the price of 14 x 20.
Calland Grade:
IC, 14 x 20..... \$6.75
IX, 14 x 20..... 8.25
IXX, 14 x 20..... 9.50
IXXX, 14 x 20..... 10.75
IXXXX, 14 x 20..... 12.00
Melyn Grade:
IC, 14 x 20..... 6.25
IX, 14 x 20..... 7.75
IXX, 14 x 20..... 9.00
IXXX, 14 x 20..... 10.25
IXXXX, 14 x 20..... 11.50
Allaway Grade:
IC, 14 x 20..... 5.75
IX, 14 x 20..... 6.15
IXX, 14 x 20..... 7.95
IXXX, 14 x 20..... 9.05
IXXXX, 14 x 20..... 10.15

Coke Plates, Bright—
Bessemer Steel, or equal to J. B. Grade, full weight } IC, 14 x 20..... \$4.90 @ 5.00
IX, 14 x 20..... 6.00
N. B.—The reduction per box on lighter plates than IC, 14 x 20, is as follows:
100 lb..... 15¢
95 lb..... 20¢
90 lb..... 25¢
85 lb..... 30¢

Terne Plates—
N. B.—The following prices are for IC 20 x 28, the rate for 14 x 20 being half as much. IX is usually held at \$2 per box advance for 8 to 10 lb coating and \$2.50 to \$3 advance for 15 lb and upward.
About 40 lb coating..... \$16.00 @ 16.50
About 30 lb coating..... 15.25 @ 15.75
About 20 lb coating..... 13.25 @ 13.75
About 15 lb coating..... 11.25 @ 11.75
About 8 lb coating..... 9.50 @ 10.00

Boiler Plates, American—
IXX, 14 x 26, (112 sheets)..... \$12.50
IXX, 14 x 28, (112 sheets)..... 13.50
IXX, 14 x 31, (112 sheets)..... 15.00

Troughs Eave—
See Eave Trough.

Trucks, Stove—
Improved Lock Frame, per doz..... \$15.00
Steel Lock Frame, per doz..... 18.00
Daisy Improved pattern, \$ doz..... 18.00

Tubes and Tubing—
Braze Brass, List June 6, 1898..... 40%
Copper and Bronze, 3c per lb. list more than Brass.
Seamless Brass Tubes, net list Feb. 6 1899
Tin..... 50%
Galvanized..... 50%
Fittings for do..... 40%
Zinc—
600 lb casks \$ lb..... 6 1/4¢
Per lb..... 7 1/4 @ 7 1/2¢

PLUMBERS' AND STEAM FITTERS' SUPPLIES.

Boilers, Galvanized—
Standard Boilers:
30 gal..... 72 1/2¢
35 and 40 gal..... 70¢
Other sizes up to 52 gal..... 65¢
52 gal. and above..... 55 & 5¢
Extra Heavy Boilers:
18 to 52 gal..... 60¢
53 gal. and above..... 50 & 5¢
Brass Work, Plumbers'—
List of December 7, 1896.
Compression:
Basin Cocks..... 60 & 10%
Bath Cocks and Double Bath Cocks..... 60 & 10%
Bibs..... 60 & 10%
Bibs, Flanged..... 60 & 10%
Fuller:
Bibs..... 70%
Basin Cocks, Nos. 1 to 4..... 70%
Bath Cocks, No. 4..... \$2.40 each net
Ground Key Work:
Finished Bibs..... 55¢
Rough Bibs..... 55 & 10%
Cocks..... 70 @ 70 & 5%
Rough Stop and Stop and Waste Cocks, Patented..... 65 @ 65 & 5%
Miscellaneous—
Basin Clamps..... 60 @ 65¢
Basin Plugs..... 60 @ 65¢
Chain Stays..... 60 @ 50 & 70¢
Iron Boiler Couplings:
Lead Pipe, Iron Pipe.
Plain Face, \$ set \$0.95 \$1.05
Ground Face \$ set \$1.00 \$1.10
Sink or Bath and Wash Tray Plugs..... 60 @ 65¢
Soldering Nipples..... 70 & 5 @ 75¢
Soldering Unions..... 70 & 5 @ 75¢
Union Elbows, Hot Water Heating..... 75 @ 75 & 15¢

Cocks, Valves &c.—
Cocks—
Brass—
Air and Radiator Air..... 75 @ 75 & 5%
Gas Meter and Union Meter..... 65 @ 70%
Steam..... 65 @ 70%
Iron—
All Iron..... 70 @ 70 & 10%
Iron with Brass Plugs..... 65 @ 70%
Valves—
Brass—
Check..... 65 @ 70%
Garden Hose..... 65 @ 10 @ 70%
Gate..... 65 @ 65 & 10%
Globe and Angle, hose outlet..... 45 @ 65 & 10%
Globe, Angle and Cross..... 65 @ 10 @ 70 & 5%
Horizontal, Vertical and Angle Check..... 65 @ 65 & 10%
Hot Water Radiator..... 75%
Radiators..... 70 & 10%
Safety..... 65%
Safety, Low Pressure..... 65%
Jenkins' Disc:
Check..... 65%
Gate..... 65%
Globe, Angle and Cross..... 70%
Radiators..... 80%
Radiators, Corner..... 75%
Safety..... 65%
Iron—
Iron Body..... 70 @ 70 & 5%
Foot..... 65 @ 70%
Jenkins Bros':
All Iron, except Gate..... 40 & 5%
All Iron Gate..... 35 @ 40%
Iron Body, except Gate..... 60%
Iron Body Gate..... 50 @ 50 & 5%
Swing Check..... 50%
Earthenware—
Brown Glazed Wash Tubs..... 20%

Brown Glazed Sinks, Kitchen and
Pantry..... 20%
Basins, Urinals and Hoppers..... 45%
Closet Bowls, Sundries, Washouts and Pedestals..... 50%
Fittings—
Brass Fittings—
Finished..... 70 @ 75%
Rough..... 70 @ 75%
Bushings..... 70 @ 75%
Nipples..... 70 @ 70 & 2 1/2%
Unions, Rough and Finished..... 70 @ 70 & 5%
Iron—
Cast Iron Fittings, Black and Galvanized, Standard sizes..... 65 @ 70%
Cast Iron Bushings and Plugs..... 65 @ 70%
Cast Iron Flanges..... 65 @ 70%
Cast Iron Floor Flanges..... 65 @ 70%
Malleable Iron Fittings (from lb list)..... 50%
" Bushings..... 65 @ 70%
" Unions..... 65 @ 70%
" Unions, Flange 60 @ 10 @ 70%
" Pipe Hangers, Universal..... 50%
Wrought Iron Nipples..... 65 @ 70%
" Couplings..... 60 @ 65%
" Long Screws..... 40 @ 65%
Lavatories—
Porcelain Enameled Iron..... 30 @ 30 & 10%
Oakum—
Plumbers' Oakum, 50 lb. bales, \$ lb 3 1/2¢
Pipe—
Brass, Iron Pipe Size—
1/4 1/2 3/4 1 1/2 2 3/4 3 1/2 4 1/2 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40 42 44 46 48 50 52 54 56 58 60 62 64 66 68 70 72 74 76 78 80 82 84 86 88 90 92 94 96 98 100
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10.33 10.38 10.43 10.48 10.53 10.58 10.63 10.68 10.73 10.78 10.83 10.88 10.93 10.98 11.03 11.08 11.13 11.18 11.23 11.28 11.33 11.38 11.43 11.48 11.53 11.58 11.63 11.68 11.73 11.78 11.83 11.88 11.93 11.98 12.03 12.08 12.13 12.18 12.23 12.28 12.33 12.38 12.43 12.48 12.53 12.58 12.63 12.68 12.73 12.78 12.83 12.88 12.93 12.98 13.03 13.08 13.13 13.18 13.23 13.28 13.33 13.38 13.43 13.48 13.53 13.58 13.63 13.68 13.73 13.78 13.83 13.88 13.93 13.98 14.03 14.08 14.13 14.18 14.23 14.28 14.33 14.38 14.43 14.48 14.53 14.58 14.63 14.68 14.73 14.78 14.83 14.88 14.93 14.98 15.03 15.08 15.13 15.18 15.23 15.28 15.33 15.38 15.43 15.48 15.53 15.58 15.63 15.68 15.73 15.78 15.83 15.88 15.93 15.98 16.03 16.08 16.13 16.18 16.23 16.28 16.33 16.38 16.43 16.48 16.53 16.58 16.63 16.68 16.73 16.78 16.83 16.88 16.93 16.98 17.03 17.08 17.13 17.18 17.23 17.28 17.33 17.38 17.43 17.48 17.53 17.58 17.63 17.68 17.73 17.78 17.83 17.88 17.93 17.98 18.03 18.08 18.13 18.18 18.23 18.28 18.33 18.38 18.43 18.48 18.53 18.58 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ALPHABETICAL LIST OF ADVERTISERS.

Adee, Fred. & Co..... 31	Colebrook, W. H. Sons & Co.. 29	Gummey, McFarland & Co... 71	Monash-Younger Co..... 31	Schwerdtle Stamp Co..... 68
American Blower Co..... 21	Co-operative Foundry Co....4&5	Gurney Heater Mfg. Co..... 17	Moncrief F'ce & Fdry. Co... 26	Selleck, A. C..... 26
American Galvanizing Wks.. 69	Colwell Lead Co..... 31	Harrington & King Perfo- rating Co..... 62	Montross Metal Shingle Co... 73	Sheppard, Isaac A. & Co..... 1
American Radiator Co..... 19	Cooney & Geiger..... 67	Hart & Cooley Co..... 23	Morgan & Co..... 26	Shields, W. H. & Co..... 27
American Sheet Steel Co...1&72	Cope, Geo. W..... 28	Hart & Crouse Co..... 16	Mueller, L. J. F'ce Co.. 18	Smith, H. B. Co..... 13
American Steam Gage & Valve Mfg. Co..... 1	Cortright Metal Roofing Co.. 69	Heartley Machine Variety Iron & Tool Works..... 76	Mullins, W. H..... 76	Smith & Anthony Co..... 80
American Tin Plate Co..... 72	Crosby Steam Gage & Valve Co..... 1	Helios-Upton Co..... 22	Munsell, E. & Co.....26&66	Smith & Tbayr Co..... 18
Anderson Coupling Co..... 31	Curtis & Curtis Co..... 31	Hessler, H. E. Co..... 27	National Enameling & Stamp- ing Co..... 32	Smith-Warren Co..... 69
Arcade Mfr. Co..... 29	Dangler Stove & Mfg. Co.... 9	Hoffman, Geo. W..... 28	National Pipe Bending Co... 25	Somerset Stove Fdry. Co.... 11
Armstrong Mfg. Co..... 31	Danzer Metal Works 77	Howes, S. M. Co..... 29	New York Iron Roofing & Corrugating Co..... 69	Sommer's, John Son..... 1
Asheville Mica Co..... 26	Davis Heater Co..... 24	Howson & Howson 66	New York Trade School. 66	Special Notices..... 66
Asphalt Ready Roofing Co.. 73	Day Metallic Mfg. Co..... 31	Habbell, Harvey..... 30	Niagara Machine & Tool Wks 77	Sperry, D. R. & Co..... 67
Anld & Conger Co..... 68	Dighton Furnace Co..... 20	Independent Register Co.... 26	Nickel Plate Stove Polish Co 29	Stamford Foundry Co..... 25
Barstow Stove Co..... 80	Dixon, Jos. Crucible Co..... 66	International Heater Co..... 3	Noppel Pump Co..... 30	Standard Lighting Co..... 11
Beckwith, P. D., Est. of..... 2	Double Truss Cornice Brake Co..... 76	Iwan Bros..... 69	O'Halloran & Jacobs..... 68	Steel & Iron Aluminum Coat- ing Co..... 71
Berger Bros. Co..... 70	Drake, W. H..... 25	Janney, Steinmetz & Co..... 70	Ohio Mica Co..... 26	Stiles & Parker Press Co.... 78
Berger Mfg. Co..... 74	Drouve, G. Co..... 77	Jenkins Bros..... 1	Ohl, Geo. A. & Co..... 78	Stocking, E. B..... 66
Bergstrom Bros. & Co..... 16	Edwards, J. H..... 26	Johnson, E. J. & Co..... 68	Osborn, J. M. & L. A 73	Stolz, Frank D..... 21
Bertsch & Co..... 78	Edwards Mfg. Co..... 74	Keene, Geo. C. & Co..... 79	Ostrander, W. R. & Co..... 75	Stowell Mfg. Co..... 76
Bliss, E. W. Co..... 78	Ellers, J. H. & Co..... 75	Kelsey Heating Co..... 32	Patric Furnace Co..... 17	Taylor Co., N. & G.... 80
Blodgett, G. S. Co..... 21	Energy Elevator Co..... 76	Kemp, C. M. Mfg. Co..... 30	Peck-Hammond Co..... 10	Tbatcher Furnace Co..... 24
Boynton Furnace Co..... 15	Excelsior Steel Furnace Co.. 23	Kewanee Boiler Co..... 16	Peck, Stow & Wilcox Co.... 77	Troy Nickel Works 28
Brand Stove Co..... 17	Fenn, Geo. E..... 67	Kieley & Mueller..... 1	Peck-Williamson Co..... 15	Tucker & Dorsey Mfg. Co.. 25
Bray J. & Co..... 68	Floyd, Wells & Co..... 17	Koven, L. O. & Bro..... 30	Perkins, J. L. & Co..... 67	U. S. Register Co., Ltd.... 25
Bridgeport Crucible Co..... 27	Follanshee Bros. Co..... 1	Kramer Bros..... 11	Phila. Machine Tool Co... 77	Utica Heater Co..... 18
Brien Heater Co..... 21	Forest City Fdry. & Mfg. Co. 21	Lawless, John H..... 30	Pierce, Butler & Pierce Mfg. Co..... 21	Van John, Range Co..... 8
Bruce & Cook.....73&80	Foster, F. W. Mfg. Co..... 30	Lawrence-Letts Elbow Co... 28	Pittsburgh Stove & Range Co 6	Valentine, M. D. & Bro. Co.. 27
Buffalo Forge Co..... 76	Frاند, Martin J. & Co..... 69	Lennox Manufacturing Co.. 25	Pocock, Oliver..... 79	Vedder Pattern Works..... 28
Burton, W. J. & Co..... 76	Friedley & Voshardt..... 74	McClure & Co..... 80	Portsmouth Stove and Range Co..... 6	Vogel, William & Bros..... 67
Callahan, Geo. & Co..... 66	Frink, L. P..... 80	McSherry, Chas..... 77	Preshrey Stove Lining Co... 27	Walker & Pratt Mfg. Co.. 20
Canton Steel Roofing Co..... 75	Front Rank Steel Furnace Co 15	Magee Furnace Co .....1&8	Richmond Co..... 12	Walworth Mfg. Co..... 1
Carroll, J. B..... 30	Fuller & Warren Co..... 1	March-Brownback Stove Co. 20	Ringen Stove Co..... 7	Wasburne, E. G. & Co...67&76
Castle, Wilmot & Co..... 23	Galesburg Cornice Works... 75	Marcy Stove Repair Co., ... 27	Robertson Mfg. Co..... 76	Waterbury Brass Co..... 1
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Clark Novelty Co..... 67	Gohelle Pattern Co..... 25	Meyer, F. & Bro. Co..... 19	Salem Nail Co..... 68	Willard, Wm. G. 11
Clark, Quien & Morse..... 68	Gordon, W. J..... 79	Millar, Chas. & Son Co..... 80	Saunders', D. Sons 31	Williams Stove Lining Co.. 29
Clason, Arch. Metal Works.. 69	Gorton & Lidgerwood Co. 1	Milwaukee Pattern Works... 26	Schneider & Trenkamp Co... 9	Wister, L. & R. & Co 80
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Crosby Steam Gate & Valve Co., Boston, Mass.
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- Wind Gates.**
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- Window Frames, Metal.**
Smith-Warren Co., Boston, Mass.

SEE ALPHABETICAL INDEX, PAGE 62.

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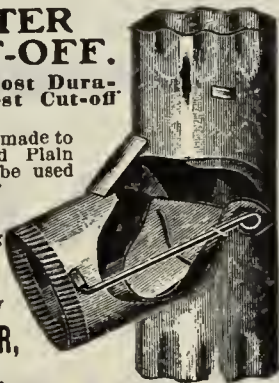
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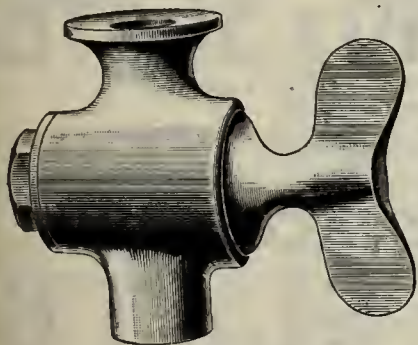
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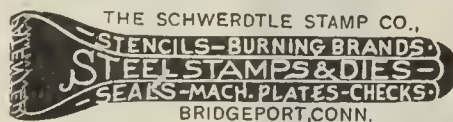
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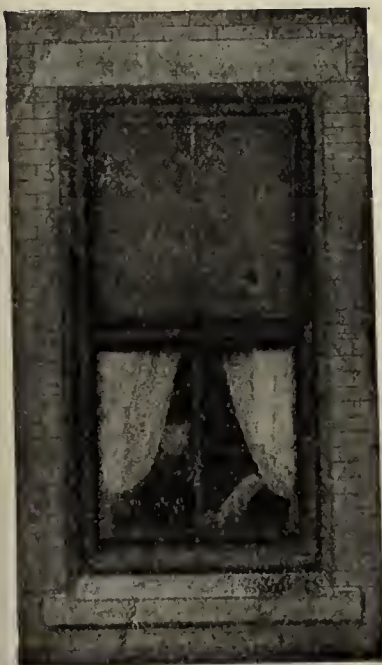
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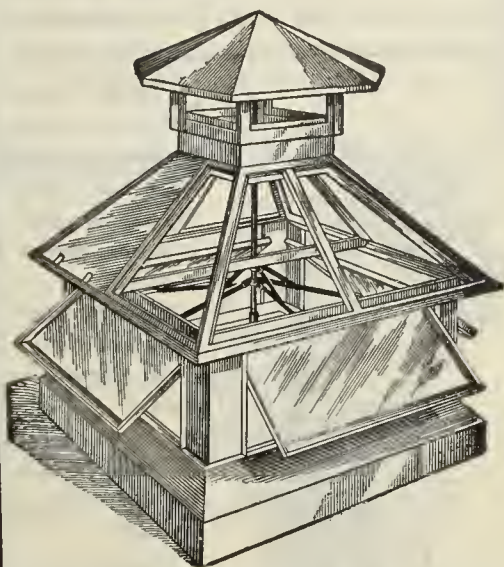
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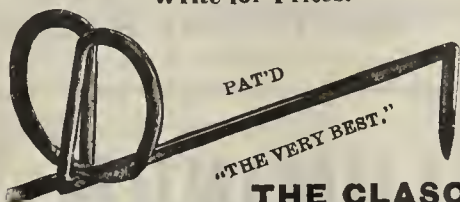
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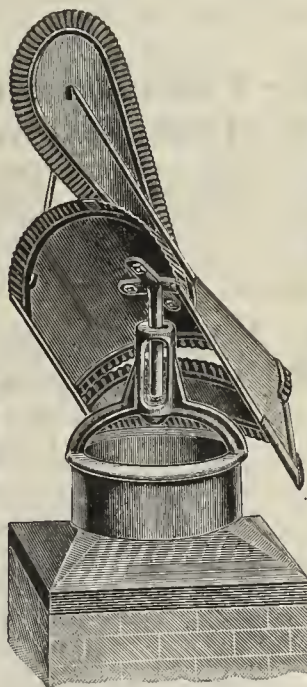
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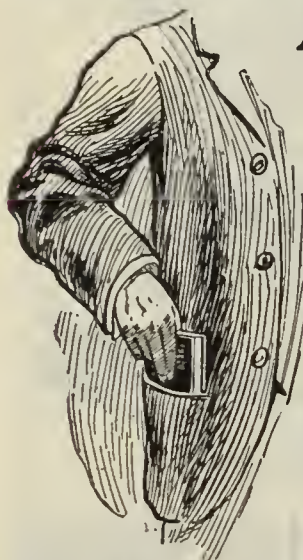
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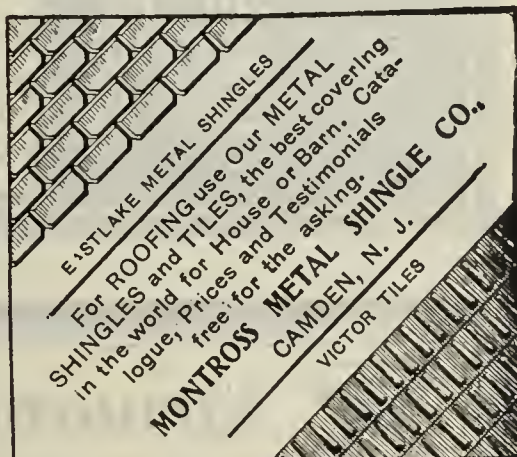
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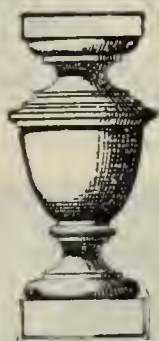
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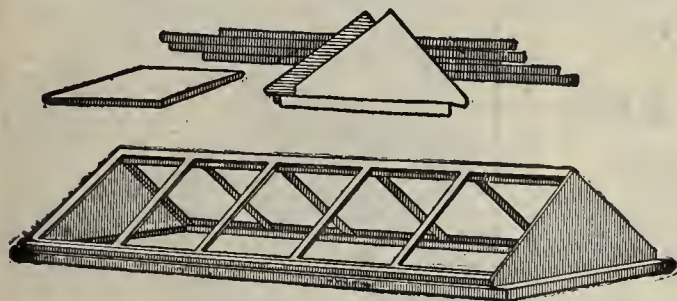
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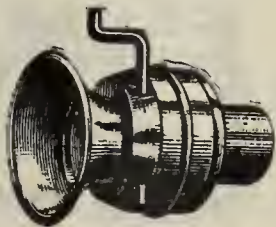


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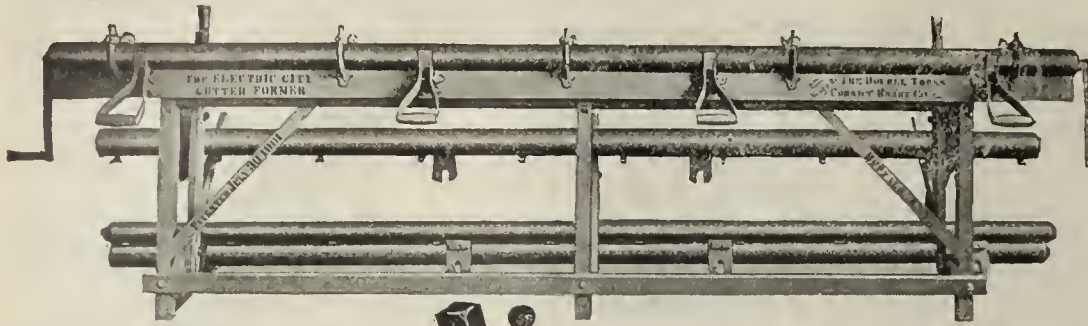
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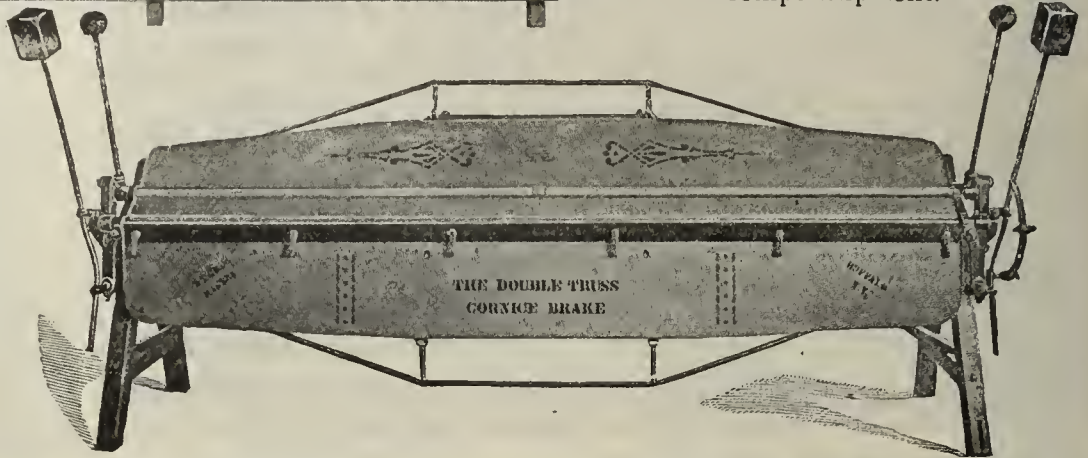
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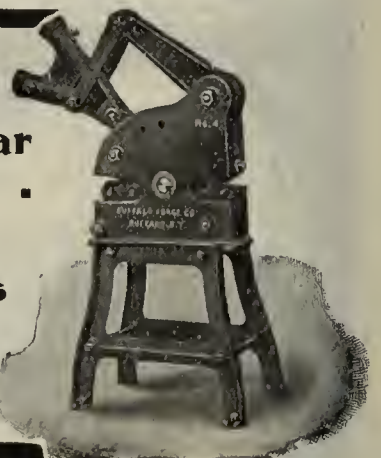
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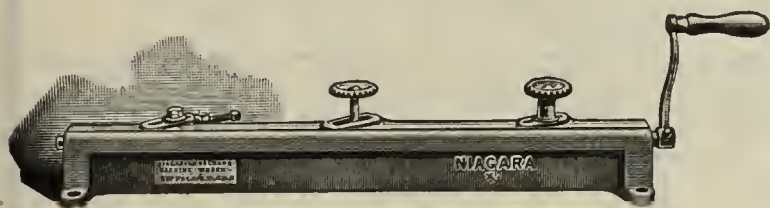
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MADE BY

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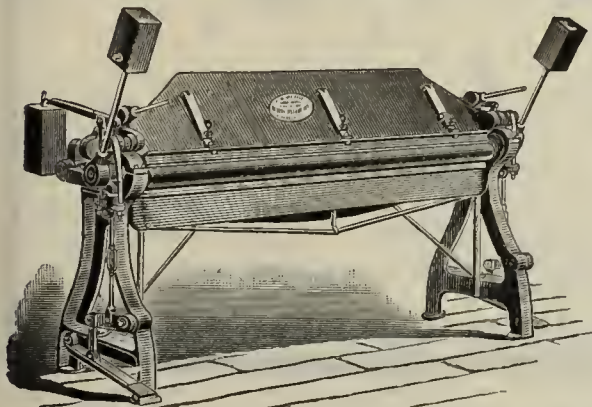
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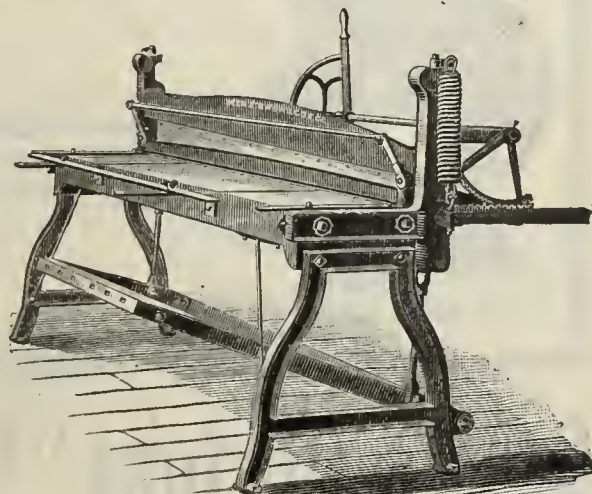
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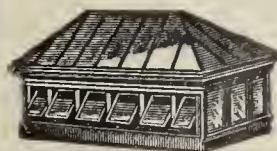
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It will edge 27 iron and tin for roll or flat seam roofing.

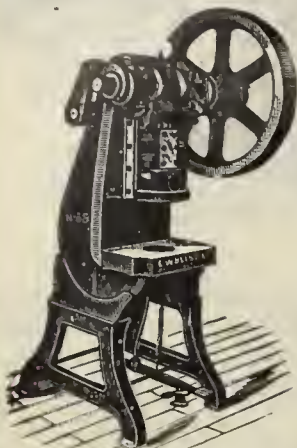
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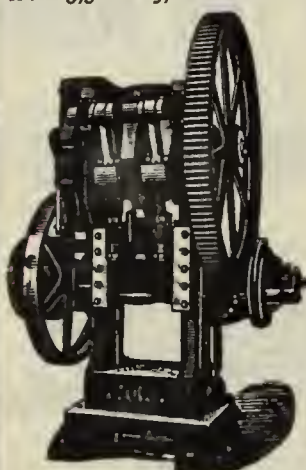
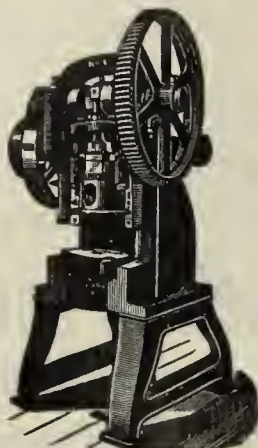
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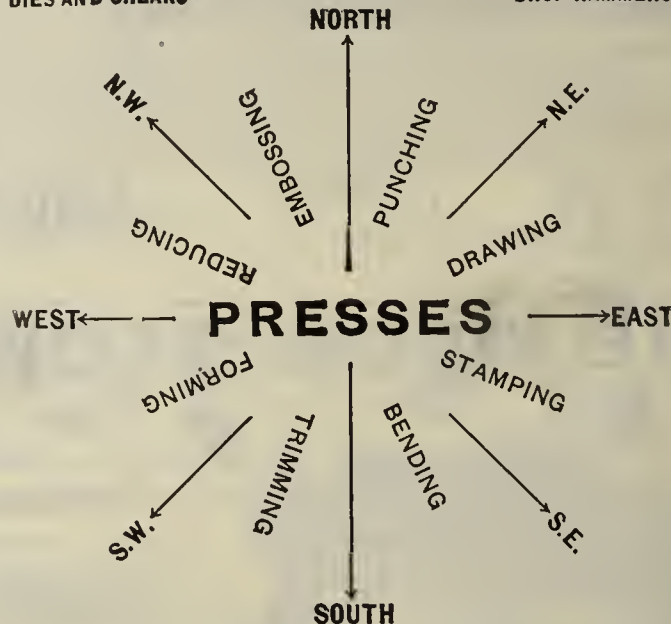
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Heavy and Light Squaring Shears.**8 FT. RANGE MAKER'S BRAKE.**

Punches,
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**Special
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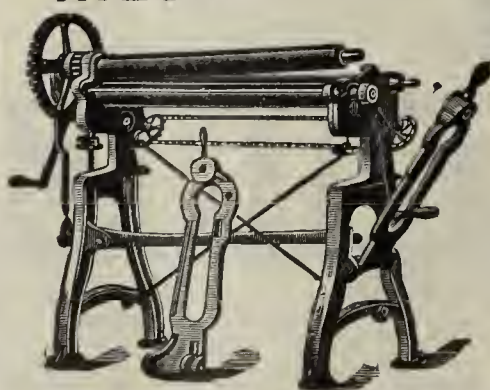
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STOCK MACHINES FOR ALL PURPOSES.

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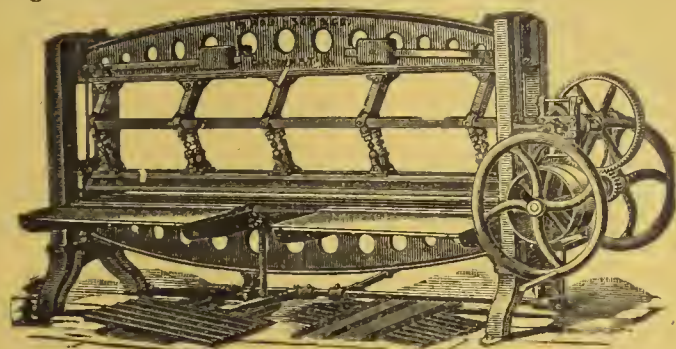


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ROOFING AND BENDING MACHINE

With Dies suitable will form Sheet Metal Roofing, Siding, Ceiling, Weather Boarding, Skylight Bars, Metal Lathing, Gutters, Ridge Caps, Escalloped Steel Sheets and Cattle Troughs. Will bend and form No. 18 gauge and lighter in 6, 8, 10 and 12 foot lengths.

We make a single Plunger Machine of same general design to bend and form 10 gauge and over.



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Builders of Sheet Metal Working Machinery.

KEENE FOOT POWER CORNICE BRAKE.

Easiest to Operate,
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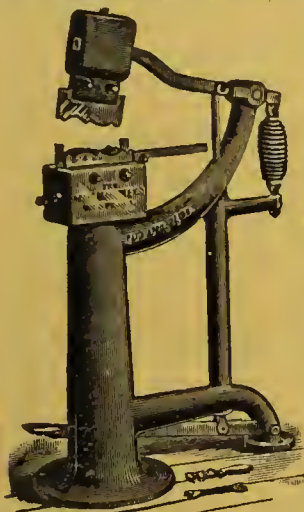
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20th Century Groover for Hand Power. We also make them for Belt Power.



20th CENTURY GROOVER, Handiest out.
Operated from one position. Automatic knock-out and Quick Return. Grooves 22 gauge.
Write for circular. Made by
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COMBINATION PRESSES and DIES,
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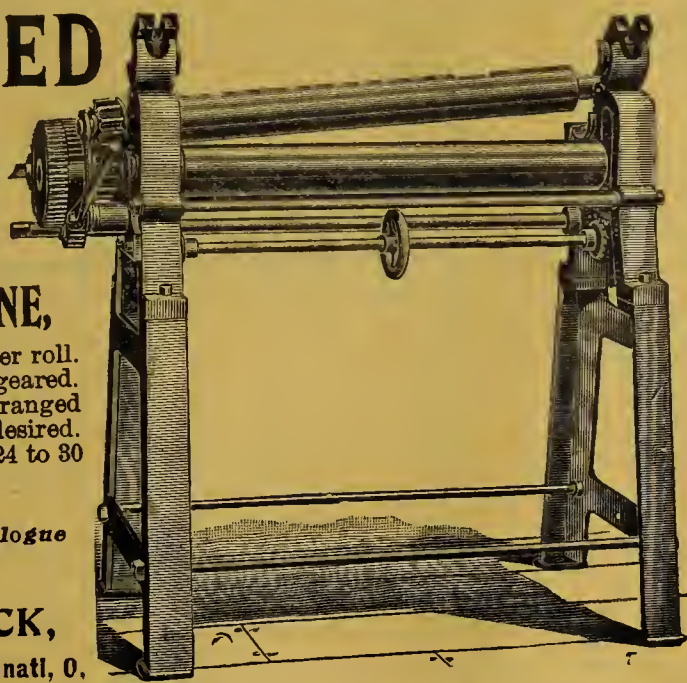
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—HER CHANCE.—“Look at those two bad boys in the river,” said Mr. Markley, as they crossed the bridge.

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—LET HIMSELF OUT.—“I constructed a fire escape yesterday in about two minutes.”

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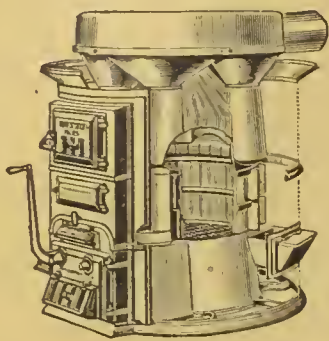
—A DREADFUL STATE.—He: “Well, we can’t believe more than half we hear.” She: “Oh, worse than that; I can’t believe more than half I say.”—*Pittsburgh Dispatch*.

—IN A COLLEGE TOWN.—Student (to servant at the door): “Miss Brown?”

Servant: “She’s engaged.”

Student: “I know it. I’m what she’s engaged to.”—*Exchange*.

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The Gas Ring around the firepot evenly distributes a good volume of superheated air over the surface of the fire, effecting complete and rapid combustion of the gases which usually pass off through the smoke pipe unutilized. It intensifies the heat from the fuel and prevents the formation of clinkers.

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The roofer who once uses these materials is never afterward satisfied with any others.

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Line of Ranges.

Steam and Water Heaters;
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VIII.
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With Hill's Solid Dies $\frac{1}{8}$ to 3 inches.
 Especially adapted for Threading Wrought-Iron
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to selling a furnace
of quality
Eliminate price
from the deal
and they think
it is all off

Price should be
the very last thing
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a furnace trade
The struggle should be
to see how good
the job could be
installed, but first
you must have
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WARM AIR FURNACE

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THE HOT AIR BLAST APPLIANCE

Is so formed that the distribution of the hot air to the combustion chamber is equally divided at three points; at the back and on each side. This appliance embodies the important advantage of a hot air blast and also the very vital point of a durable construction. This question of durability of a hot blast appliance for soft coal fuel is one that has caused much annoyance and expense, and in this construction we have carefully provided for this important point. It is not a part of the combustion dome or fire-pot, insuring equal expansion and contraction. The air is discharged into the combustion chamber directly over the surface of the fire, and at a very high temperature, yet the construction is such that the combustion does not come in direct contact with it; the parts are allowed to expand and contract equally.

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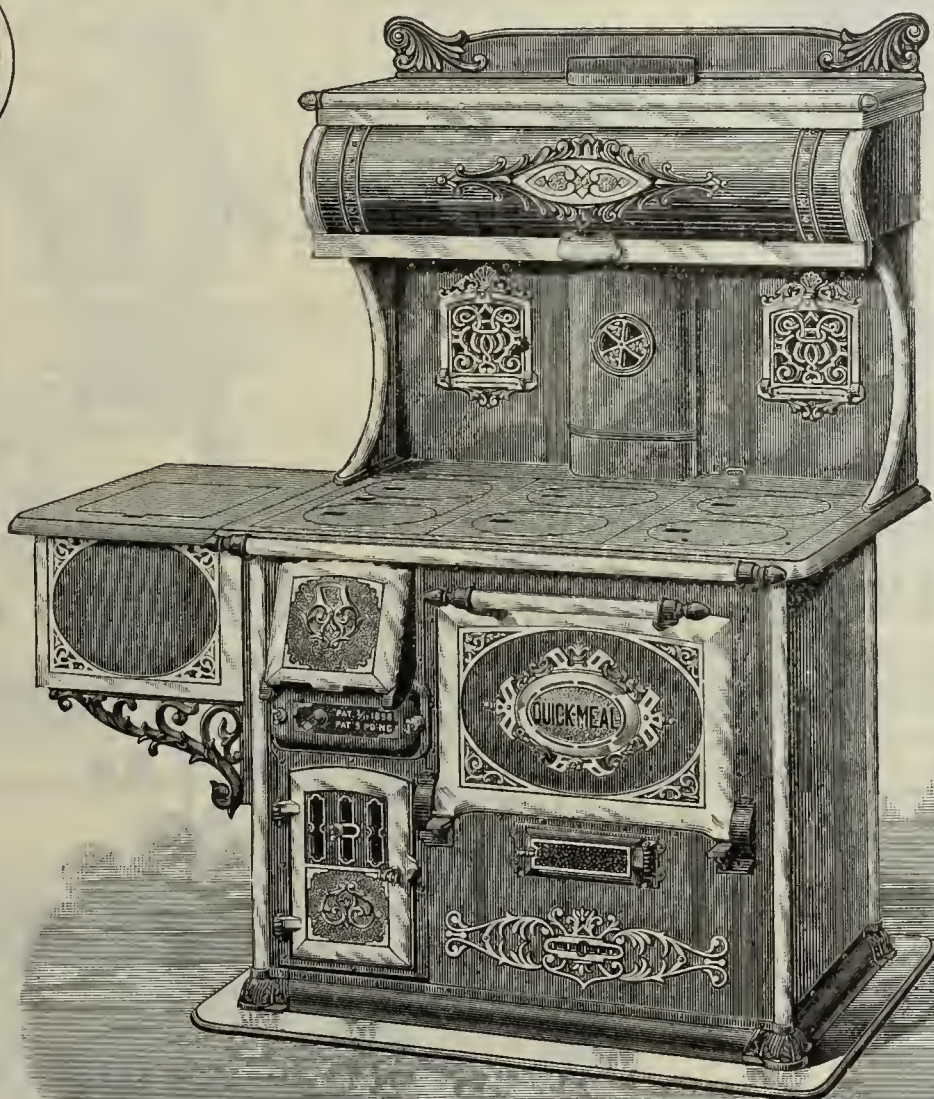
—The illustration is from a home recently furnished with Moore's Premium No. 268 Reservoir and Closet.

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Top and End Feed. Reversible Pipe Collar.
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A Record and a Reputation.

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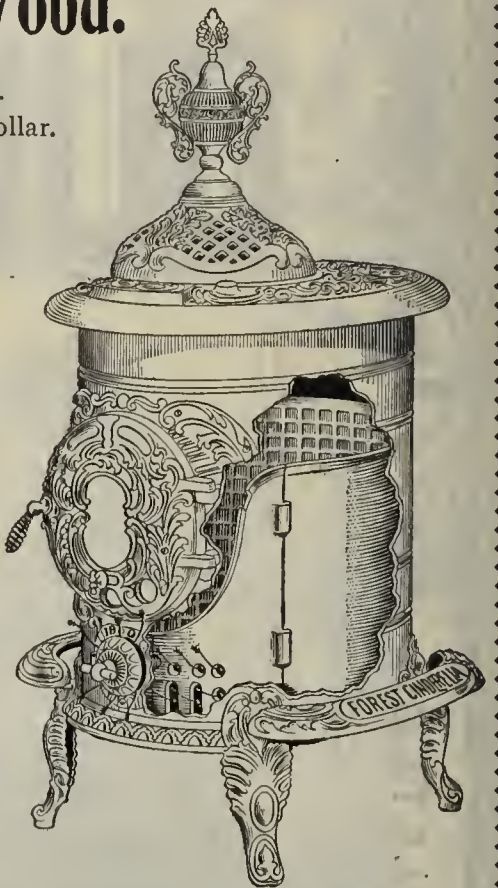
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—BY—

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HOT BLASTS

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They have all the good features of the most popular stoves of this class. They are **made only in the highest grade** and of the **heaviest and best materials**.

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Ash Pit Door with our Patented Air Tight Register, through which the grate can be operated and clinkers removed instead of fishing them out through the top door with a long poker.

Large Ash Pit provided with **Large Ash Pan**.

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They are better fitted, better finished than any other stove of its class, and **the Price is Right**.

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MADE IN 17 AND 19 INCH OVEN.

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Height, 27 in.
Weight, 10 lbs.
None better.
Made of polished
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Ornamental,
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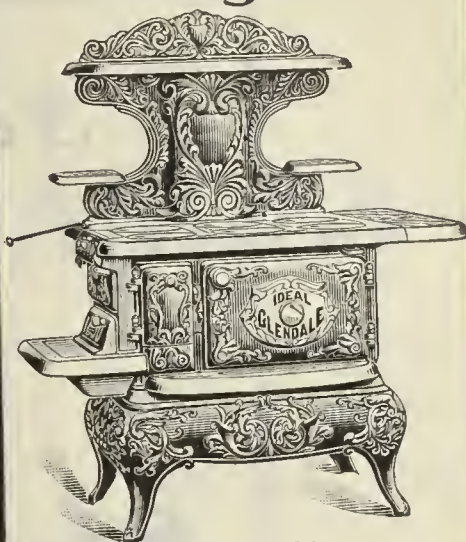
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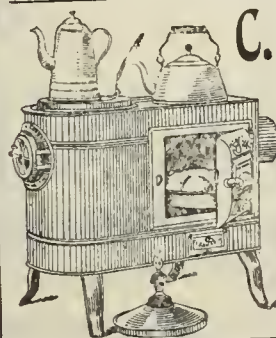
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SOMERSET STOVE FOUNDRY CO.,
Send for a Sample. SOMERSET; MASS.



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And Many Other Important Things that Good Workmen Must Know.

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ONE DOLLAR, POSTPAID.

DAVID WILLIAMS CO., PUBLISHERS
232-238 WILLIAM ST., NEW YORK.



I Will Give the Public the Benefit.

Having completed patterns for my 1902 line, I will close out my last year's pattern of the celebrated
400 LB. WILLARD STEEL RANGE for \$15.00.
This is Less than 4c. per pound.

They have six 8 inch lids. Oven, 17 x 21 x 12. Top Cooking Surface, 30 x 36. Large Warming Closet. 15 gallon Reservoir. Duplex Grate, Burns Wood or Coal. Lined throughout with Asbestos.

EVERY ONE GUARANTEED. BUY NOW AND SAVE 100%.
Write for Free Descriptive Circular and Testimonials.
"FIRST COME—FIRST SERVED."

WM. G. WILLARD,
619-621 N. 4th St., - - - St. Louis, Mo.

STOVE DEALERS WILL SAVE MONEY IF BUYING FROM THE
Metropolis Sheet Metals and Stove Repair Co.
MAIL ORDERS PROMPTLY FILLED.

Manufacturers of **GAS STOVES, STOVE PIPES, ELBOWS, DRUMS, Etc.**
AND DEALERS IN

A FULL LINE OF STOVE REPAIRS, UP TO DATE.

Write for Prices.

261-261 1/2 Springfield Ave., Newark, N. J.

Something New.
The
Jewel
Steel Range

FOR COAL OR WOOD,

MADE BY

George M. Clark & Company

leaves nothing to be desired in a Steel Range.

Claims on paper are well enough

Claims and cuts in a catalog are good

Claims of a salesman are better

But a

Sample on your floor is convincing.

Write for our catalog.

Wait for our salesman.

Order a Sample.

George M. Clark & Company

73 Lake Street, Chicago.

**WE WISH TO CALL ATTENTION TO OUR NEW
OAK STOVES ON THE FOLLOWING PAGES**

The **OAKVALE ANDES**

A new departure in stoves, being an entirely original form of Oak Stove with Full Return Flue and Tea Kettle Attachment in as good form and as good an operator, also as economical, as any base burner ever produced.

The **OAK ANDES**

as shown hereafter for the year 1902 is unquestionably one of the best if not the very best Oak Stove offered to the public at this time.

The **GENEVA OAK**

An entirely new medium price stove. Made to meet the demands of the times.

**ALTOGETHER THESE THREE STOVES MAKE THE
BEST LINE YET OFFERED TO THE TRADE**

MADE BY

Phillips & Clark Stove Co.

GENEVA, N. Y.

The OAKVALE ANDES

An Entirely New
Full Return Flue
Base Burning Oak
Stove.



Unquestionably
the best Heating
Stove ever offered
to the Public.

Absolutely
Air Tight.

MADE IN THREE SIZES:

No. 141, having 14-inch Fire Pot
" 161, " 16-inch " "
" 181, " 18-inch " "

THIS STOVE is offered with the full assurance that it is not only attractive in appearance, but absolutely good in quality.

THE JOINTS are entirely new form and thoroughly bedded in asbestos cement.

THE DAMPERS are ground in emery, making them perfect fitting, and altogether this Stove is as near **air tight** as it is possible to make one, thus insuring perfect control and consequent **satisfaction**.

THE PRICES are reasonable considering the article in question.

THE BEST FORM OF TRIANGULAR GRATE is used for coal. **Wood Grates** are also provided when desired.

IT IS SOLD WITH OR WITHOUT THE MAGAZINE.

THE ASH PAN is unusually large.

THE PLATED TRIMMINGS are massive in appearance and of the very best quality.

THE FLUES are of the most approved base burning construction, the heat from the fire chamber passing down the back flue in and under the base, returning through the same to the upright flue, thence to the exit, thus retaining in the stove the heated products of combustion as long as it is possible to do so.

THIS STOVE is also made as a **double heater**.

THE DOUBLE HEATING ARRANGEMENT in the **Oakvale Andes** is an entirely new arrangement and will prove entirely satisfactory in actual operation.

IT IS FULLY GUARANTEED TO GIVE PERFECT SATISFACTION when properly set under fair conditions.

MADE BY

Phillips & Clark Stove Co.

GENEVA, N. Y.

The OAK ANDES FOR 1902

Almost entirely new, having every essential feature of a perfect Oak Stove



With Triangular Grate for Coal; also Wood Grate when desired

THE OAK ANDES has been very much improved for the year 1902. It is claimed that our Oak Stoves heretofore have been as good as were on the market at the time, but with the present production it is claimed that it is far in advance of any other Oak Stove offered to the public; **the improvements being Two Feed Doors, A Much Larger Ash Pan, A New Form of Triangular Grate, More Substantial Base and Bottom, and an Entirely New Foot Rail.**

Considering size, weight and quality, we think that the prices are very favorable.

IT IS MADE IN THE FOLLOWING SIZES:

No. 614, having 14-inch Fire Pot.

No. 618, having 18-inch Fire Pot.

" 616, " 16-inch " "

" 620, " 20-inch " "

THE THREE SMALLER SIZES ARE ALSO MADE AS DOUBLE HEATERS.

THE FIRE POT in this Stove is almost straight, making it much more desirable in actual service, as the ashes will not hang on the pot, thereby preventing good radiation.

SIMPLICITY OF CONSTRUCTION and ease of repairs in all its parts are mentioned as improvements in this pattern. **The Automatic Cover** in the top, **Spacious Magazine** when desired, also **Register Wood Grate** when using wood entirely, are all of the most approved kind and forms.

THE DESIGN as a whole is certainly very pleasing, and the stove dealer who desires to sell a strictly good Oak Stove should secure the agency of the **OAK ANDES FOR 1902.**

MADE BY

Phillips & Clark Stove Co.

GENEVA, N. Y.

The GENEVA OAK



THE GENEVA OAK is made to meet the demand for an Oak Stove which might have all the essential features of higher priced goods and yet sell at such rates as will enable it to come within the reach of a large number of buyers.

MADE IN THREE SIZES:

No. 131, having 13-inch Fire Pot.

No. 151, having 15-inch Fire Pot.

No. 171, having 17-inch Fire Pot.

ESSENTIAL FEATURES.

THE ASH PAN is unusually large and will be found to be a great convenience.

THE GRATE is of the triangular form, which is acknowledged to be the only proper grate to use in an Oak Stove, and as made in the **GENEVA OAK** is of the most approved style. By the use of this Grate the fire can be agitated and the clinkers removed with the utmost ease so the fire may be kept as long as desired.

THE MAGAZINE for Coal is of ample proportions and is a great convenience when using coal constantly.

THE MICA DOOR gives a cheerful appearance, and as the Mica is protected by perforated tin it will last much longer than it otherwise would.

THE DAMPERS are of the register pattern and enable the user to at all times have the fire under perfect control.

THE TRIMMINGS are neat and attractive.

THE PLATED FOOT RAIL screens the fire pot from view and at the same time answers as a useful foot rail when so desired.

THE GENEVA OAK is unquestionably the best stove of this grade on the market, and all who desire a medium priced stove can buy it with *the full assurance that it will meet their wishes.*

MADE BY

Phillips & Clark Stove Co.
GENEVA, N. Y.

THE H.B. SMITH CO.,
WESTFIELD, MASS., U.S.A.

Catalogue furnished only upon application to
Heating Contractors, Engineers and Architects

92 Pages. Size 9 x 12 Inches.

**COTTAGE
BOILERS.**

STEAM BOILERS (8 SIZES), 550 SQ. FT. RADIATION SUPPLIED.
WATER BOILERS (8 SIZES), 900 SQ. FT. RADIATION SUPPLIED.

PACIFIC COAST AGENTS
HOLBROOK, MERRILL & STETSON,
SAN FRANCISCO, CAL.

EUROPEAN AGENTS
AUG. EGGERS,
BREMEN AND NEW YORK CITY.

SALESROOMS :

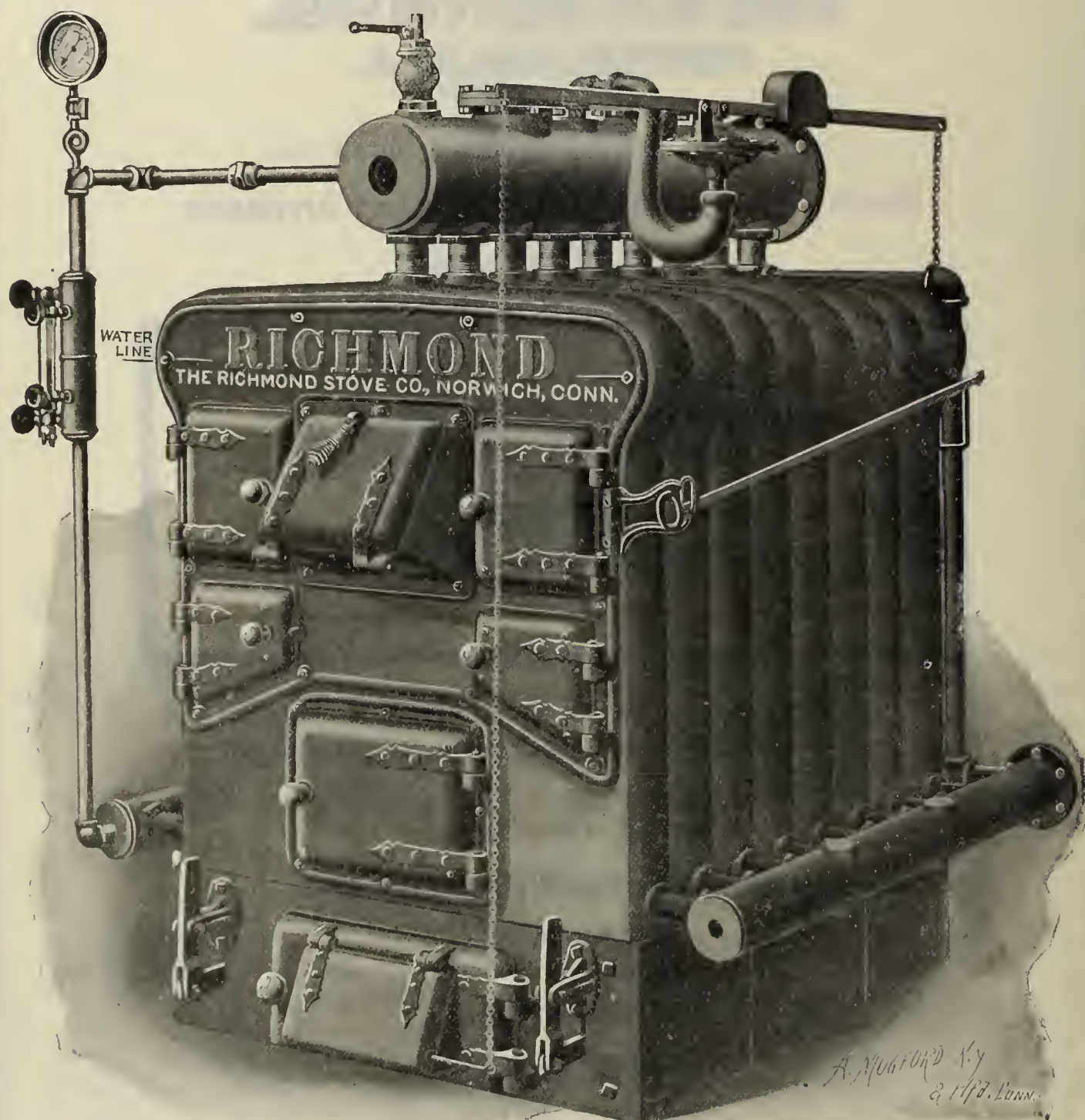
THE H.B. SMITH CO.,

133 CENTRE STREET,
NEW YORK.

510 ARCH STREET,
PHILADELPHIA.

RICHMOND

Heaters that HEAT.



Get in line and be up to date in the boilers
you buy as you are in other things.

WRITE TO-DAY FOR CATALOGUE X,
And learn something about our New Heaters that HEAT.

THE RICHMOND COMPANY, NORWICH, CONN.

NEW YORK, 737-38 Park Row Bldg.
PHILADELPHIA, 18-24 S. 7th St.

PITTSBURG, 210 Ferguson Bldg.
CHICAGO, Chicago Heater & Supply Co.
ST. LOUIS, Rumsey & Sikemeier.



PATENTED.

STRAIGHT FROM THE SHOULDER.

There are lots of dealers who have listened to plausible tongues and put in a stock of furnaces, only to find that these furnaces did not do what they were claimed to do.

Possibly these furnaces are not particularly bad. Maybe they are about as good as the run of furnaces. That makes no difference.

A furnace ought to realize every claim that is made for it by its manufacturer. If it does not it amounts to just plain lying and a black fooling of that dealer.

There isn't a dealer in this country who has been disappointed one iota in the Peck-Williamson Underfeed Furnace.

We will make that stronger. There isn't a user of the Peck-Williamson Underfeed Furnace in this country to our knowledge who doesn't congratulate himself every winter.

The Peck-Williamson will do just what we say it will do.

We claim that it will save more fuel than any other furnace made. Operates at from 1-2 to 1-3 cost of other furnaces.

We claim that it will give more heat, ton for ton of coal, than any other furnace built. We mean every word of it. We stand ready to prove it.

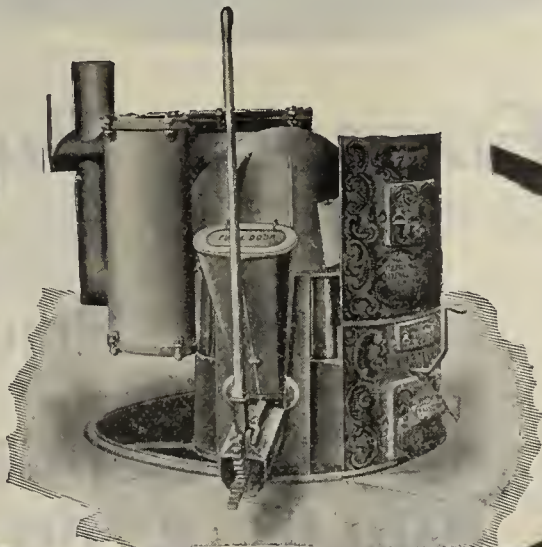
You take a furnace that feeds coal from underneath, and does not force combustion and does not allow gases and carbon and smoke to rush up the chimney, it is going to save coal. You can't figure it out in any other earthly way.

The Peck-Williamson Underfeed Furnace is the furnace all men are coming to. It is the only furnace that can be sold in your community shortly. The man to whom you sell this furnace will thank you every winter after. The trade of your place is yours if you want it.

Our new booklet will show you just how you can get this trade. Say the word.

Ask about the Peck-Williamson Laundry Dryer, the labor-saving, clothes-saving kitchen necessity.

The Peck-Williamson Company
CINCINNATI, OHIO.



PATENTED

CAB

HIGH GRADE HEATERS.

Some Dealers Look

Is Made

Is Wiped Out

**OTHER
DEALERS
INSIST**

on using

**Good MATERIALS
WORKMANSHIP
FURNACES.**

The result of such choice is satisfactory heating, pleasant feelings between the purchaser and the dealer, and the

**WARMEST
RECOMMENDATION**

of the furnace and the dealer.

**A GOOD BUSINESS
REPUTATION**

is obtained, and when good work is wanted this dealer is sought out and fair prices paid for his work.

to the profit they make on the sale of a single furnace, and if a cheap furnace is used the profit looks large when the contract

When this cheap furnace fails to heat, and gives out in the middle of winter, the dealer is obliged to alter and readjust the setting, secure repairs for his furnace, and in the end the entire profit

and great disgust follows to both the purchaser and the dealer

The Basis

of all heating is a

Good

Furnace,

one that is **SIMPLE** in operation, **ECONOMICAL** in fuel and **LONG-LIVED** without the need of repairs.

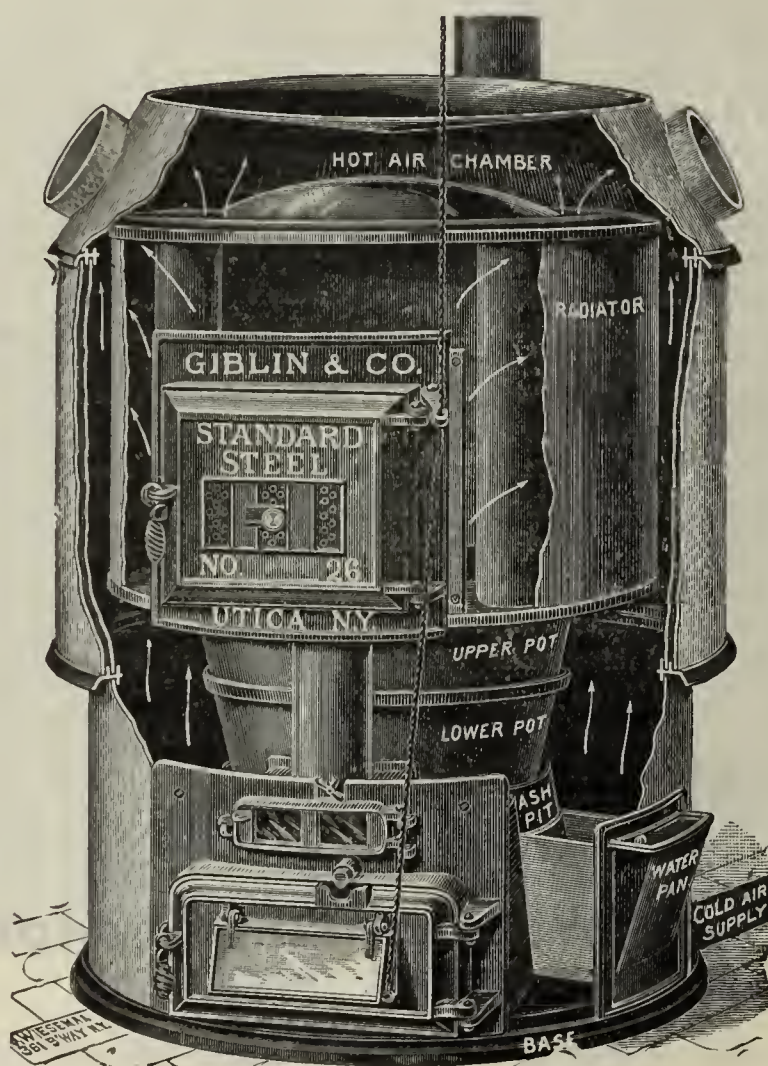
The furnace shown here has all these merits, and the actual use of

Many Thousands

of these heaters has demonstrated its superiority.

**FURNACE
DEALERS**

who are trying to establish a



Good Furnace Business

should place themselves in communication with us, obtain our catalogue, see the line of heaters we make and get in position to do business on a good basis for the balance of the year 1902.

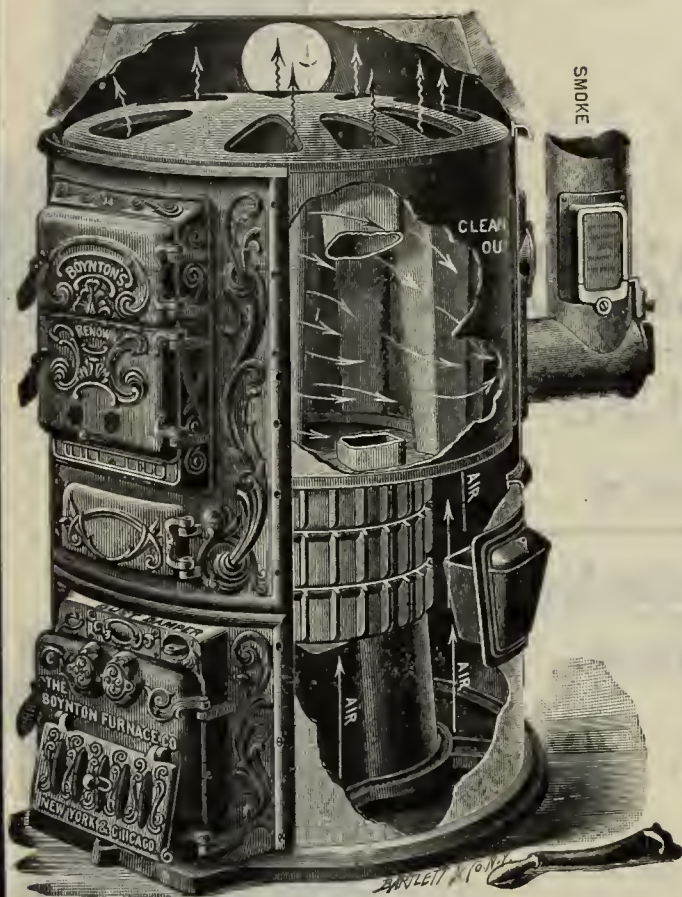
Our Prices

are reasonable, and our treatment of our customers is

More Reasonable.

GIBLIN & CO., Utica, N. Y.

BOYNTON'S "RENOWN" PORTABLE FURNACE

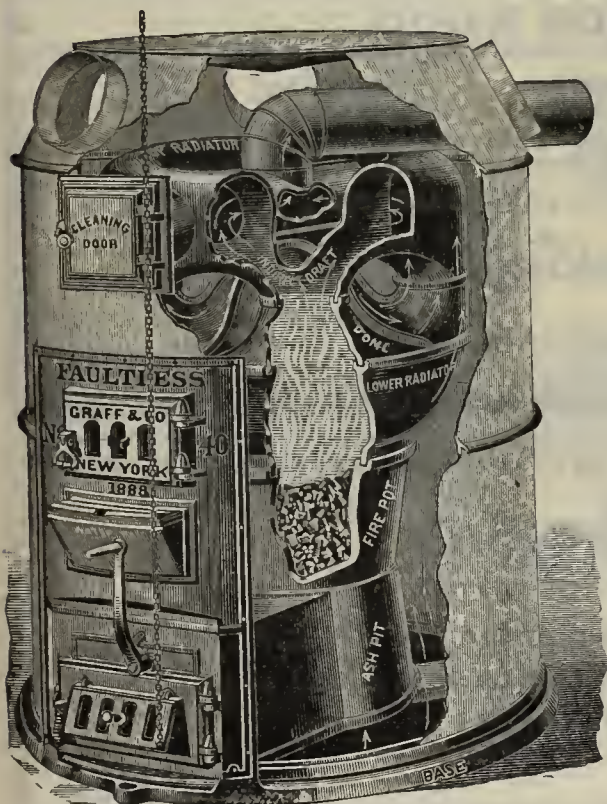


A new and distinct type of construction, thoroughly tried and tested. Possessing more area of heating surface to area of grate surface than any other furnace manufactured.

Notice construction of cast iron heating flues, each one directly over and in contact with fire. Can we mail you catalogue and prices?

The **BOYNTON FURNACE CO.,**
NEW YORK. CHICAGO.

THE TEST OF TIME



Has been applied to the Furnaces of our manufacture and they have **stood the test.**

It is not wise or necessary to experiment with unknown heating apparatus. Our assortment is large and meets every requirement of locality and competing conditions.

An established reputation for **durability, efficiency and economy** is a **fact** which should interest the best

dealers. We invite investigation.

THE GRAFF FURNACE CO.,

Manufacturers,

208 Water Street, New York.



Royal Heaters.

HART & CROUSE CO.,

235 Water St.,
New York.

78 Lafayette St.,
UTICA, N. Y.

79 Lake St.,
Chicago.

The Leading Line of Heating Apparatus.

**HOT WATER,
STEAM,
HOT AIR.**



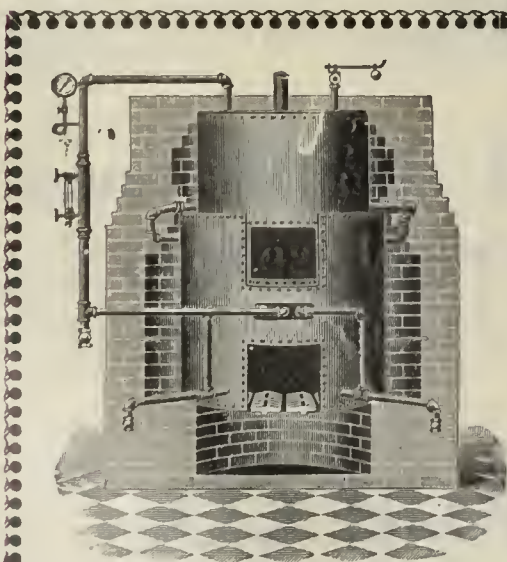
Emperor Furnaces FOR WOOD.

Simple, Safe, Durable. Economical in Fuel.

The Best and Cheapest Line of Wood Furnaces. . . .
Furnished for either Brick or Galvanized Iron Casing

SEND FOR CATALOGUE.

Bergstrom Bros & Co.
NEENAH, WIS.



**THE
HAXTUM**

**A Steel Brick-Set Boiler for Steam and Water
Heating—Hard or Soft Coal.**

HAS AN ESTABLISHED REPUTATION.

SOLD ON MERIT.

PRICES TO THE TRADE ONLY.

KEWANEE BOILER COMPANY

Chicago Store, 169 E. Lake St.

KEWANEE, ILL.

Eastern Representatives:

{ MODEL HEATING CO.,
Philadelphia, Pa.
New York, N. Y.
Buffalo, N. Y.
Boston, Mass.



Perfectly Natural.

A keen observer recently remarked that what displeased him most was to see people try to be what they are not. You're seemingly obliged to sell some apparatus on that basis, but never

"GURNEY" HEATERS, BRIGHT IDEA, DORIC and 400 SERIES,

You may claim what we claim for them in the fullest confidence. It's never necessary for you to stretch their efficiency, their durability, or their economical fuel consumption. It's never necessary to make any misstatements about their ratings, for each heater is honestly rated and will do exactly what we claim for it. "Gurney" Heaters, by the way, are sold, not on "saying" but on "doing."

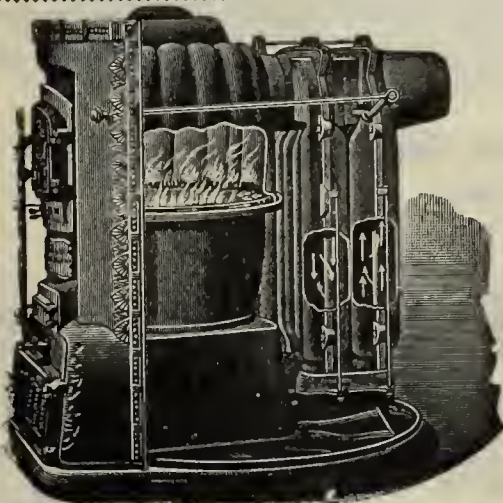
You won't have to look far to find people right in your locality who'll help you sell "Gurney" Heaters by their recommendation of them. Write for latest catalogue and agents' particulars.

Gurney Heater Mfg. Co.,

74 Franklin St., Boston.

III Fifth Ave., New York City.

Western Selling Agents, James B. Clow & Sons, 358 Franklin St., Chicago, Ill.



COAL

will be dear, no doubt, this winter. If you use a **BENGAL FURNACE** you need not worry, because your coal bills will be no bigger than when you used the other furnace and coal was cheap.

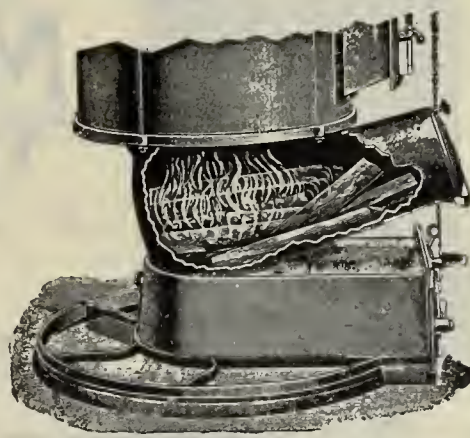
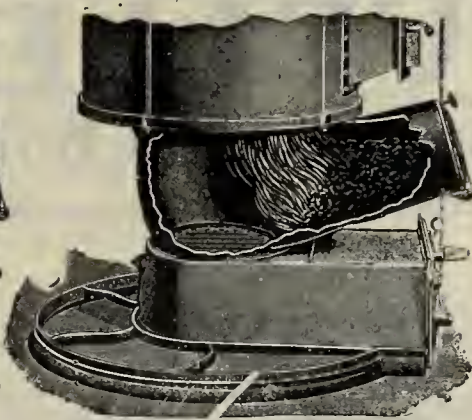
THE RADIATOR DOES IT.

Write for particulars.

FLOYD, WELLS & CO., Royersford, Pa.

NEW YORK OFFICE, 210 WATER ST., R. W. HILLMAN, Manager.

Eastern Selling Agents:
GURNEY & CO.,
Washington, Hanover and Elm Streets, Boston, Mass.



THREE PRACTICAL USES

to which the *Combination* Fire Bowl and *Coking Magazine* used on the **PATRIC FURNACE** may be put.

The first cut shows soft coal undergoing coking process in magazine, with coked coal in main bowl. A *great fuel saver*. Second cut illustrates fire carried only in magazine, for light Spring and Fall heating, a *great convenience*. Third illustration shows furnace used for wood. A *success for twenty years*.

SEND FOR NEW ILLUSTRATED CATALOGUE.

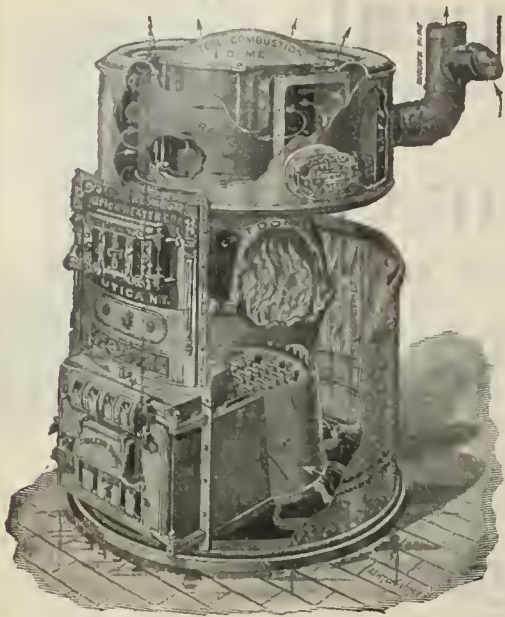
THE PATRIC FURNACE CO., = Springfield, Ohio.

BRAND STOVE CO.

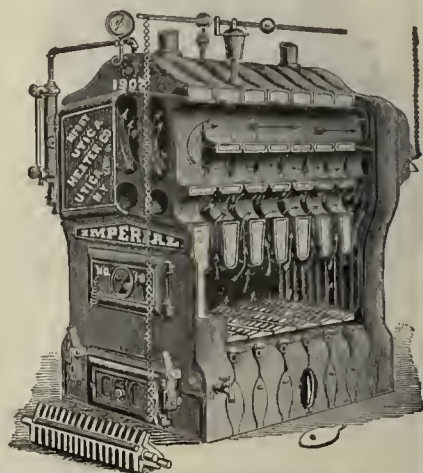
STOVES, RANGES and
FURNACES.

SEND FOR CATALOG.

MILWAUKEE, WIS.



IMPROVEMENT THE ORDER OF THE AGE.



We are constantly making additions and improvements to our entire line of furnaces and boilers. Our aim is to ALWAYS be in front.

With the most complete and extensive line on the market—up to date in every point—for all requirements and all fuels—we are in a position to supply your demands. Rock bottom prices, too.

Let us go into details and send you our catalogues and discounts. It won't do you any harm and undoubtedly will be to your decided advantage.

UTICA HEATER COMPANY,

General Offices,
UTICA, N. Y.

NEW YORK CITY,
106-108 Beekman Street.

CHICAGO,
33 Dearborn St

BOSTON,
24 India Square.

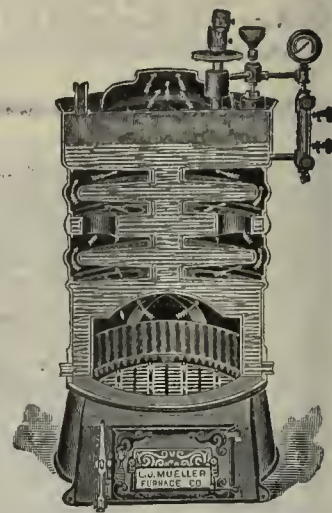


WHY NOT
SECURE THE AGENCY
OF THE

MUELLER Furnaces and Boilers

The Best and Most Complete Line

Write for Catalogue and Prices.
EVERYTHING IN THE HEATING LINE.



ESTABLISHED 1857.

L. J. MUELLER FURNACE CO.
190 REED STREET, MILWAUKEE, WIS.



WINCHESTER

When the "WINCHESTER" heater was first put on the market a fitter said that "life was too short" to investigate its merits. Possibly that is why that particular fitter is short to-day. Those who did investigate are not complaining about wasted time. Agencies can be secured of Smith & Thayer Company, Boston, Mass.; 105 Beekman St., New York.

HEATER.



Our New Ideal Premier Tank Heater

is now ready for the market, and we invite your critical examination of its various features of construction.

Send for 1902
profusely illus-
trated catalog.

AMERICAN RADIATOR COMPANY

Lake and Dearborn Streets,
Chicago, U. S. A.

Ideal Premier Tank Heater.

New York,

Philadelphia.

Buffalo.

St. Louis.

Minneapolis.

Denver.

WEIR ALL STEEL GAS AND SOOT CONSUMING FURNACE.

THE HEAVIEST STEEL FURNACE MADE.

Absolutely gas and dust tight. A great heat-producer but a fuel saver.

MANUFACTURED BY

THE MEYER FURNACE CO.,

1300-1304 S. Washington St.,

SEND FOR CATALOGUE.

PEORIA, ILLS.

"The Handy Furnace Pipe."

MADE WITH A VIEW OF BEING SAFE.

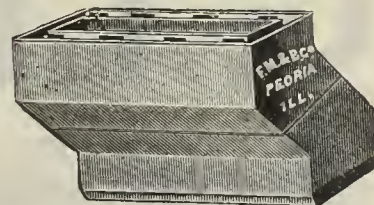
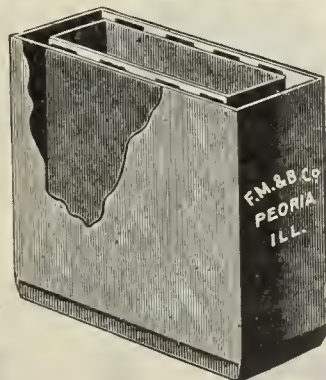
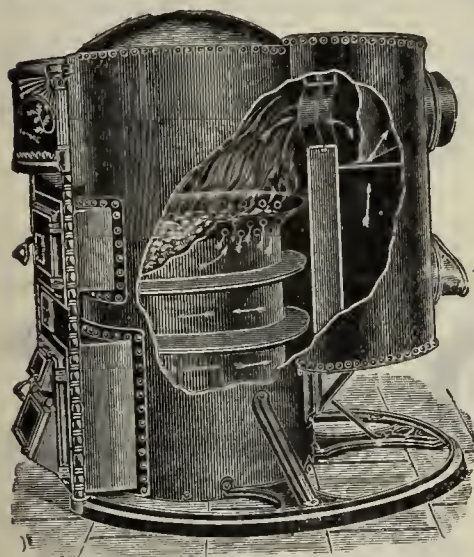
The saving of labor in putting it up really makes it the cheapest hot air pipe on the market.

MANUFACTURED BY

F. MEYER & BRO. CO.,

SEND FOR CATALOGUE.

PEORIA, ILLS.



About Fire Pots.

We formerly lined our fire pots with cast iron—then they cracked and warped. Now we use fire brick for lining and will guarantee it for five years. The lining is replaced through the fire door.

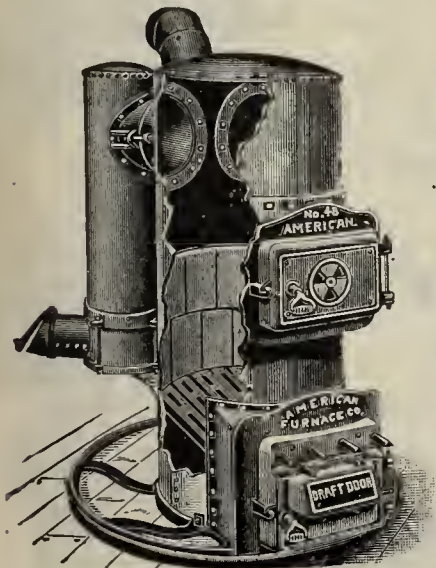
The **AMERICAN FURNACE** is made strong in places where other furnaces have proven weak; it is made of heavy steel and riveted tight like a boiler. Will burn any kind of fuel.

You can only build up a permanent furnace business by handling a first-class furnace. We manufacture for the better class of trade.

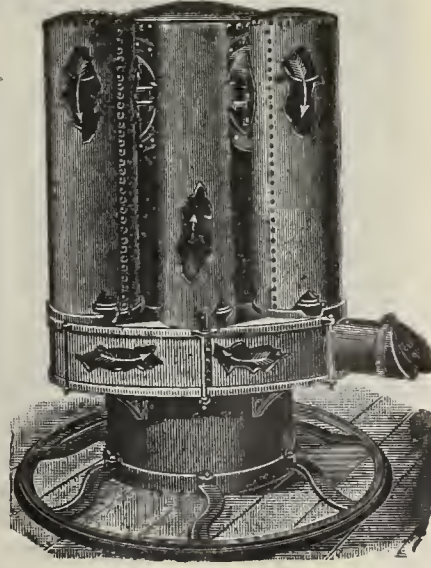
The American Furnace Co.,

1911-13 PINE STREET,

ST. LOUIS, MO.



Burn Hard or Soft Coal, or Coke. Large Doors.



Large Radiators, easy to clean out.

Write for prices and secure the agency before the other fellow gets it.

The New WALKER BOILER

for Steam: for Water

This boiler is attracting much attention among good judges of boilers; it seems to be just the boiler that every one has been looking for, a plain, straightforward, well made boiler, with proper depth of fire box, push nipple joints, triangular grates, easily cleaned flues, and superior castings.

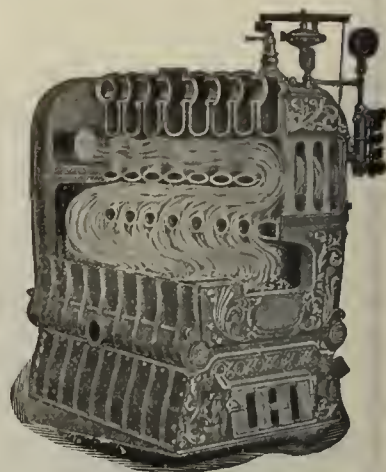
SOLD ON THE HONEST RATING PLAN.

Will be pleased to send catalogue and discounts.
Correspondence and inspection invited.

WALKER & PRATT MFG. CO.,

31-35 UNION ST., BOSTON, MASS.

"Finest Factory in this line in the world."



WALKER BOILER.

E. G. ROBERTSON, Pres.
F. H. ROBERTSON, Sec'y and Treas.

The Hartford Western Land Co.

Capital, \$50,000.

Acts as agent for non resident owners.
Real Estate rented and sold on commission.
List furnished on application.

Sedgwick Block, 118 E. First Street.

Wichita, Kan., June 9, 1902.

Mr. R. W. DRUMMOND,
Fargo, N. Dakota.

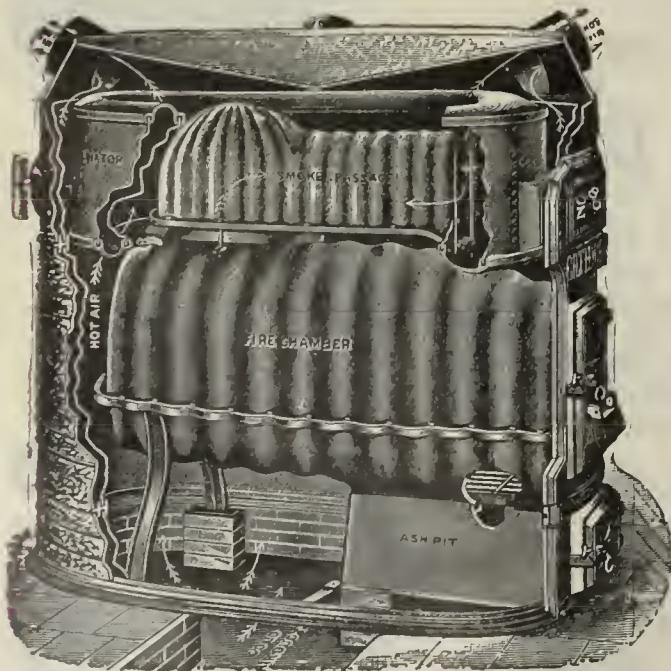
Dear Sir:

I am using the "DIGHTON" Furnace and it goes all right. I am giving it plenty of fresh air and a good quality of coal in heating a large six-room cottage. If I were to buy another I would get the next size larger. I believe a large body of fire run slowly gives the best results.

Yours respectfully,

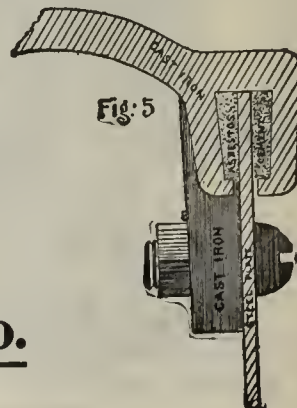
E. G. ROBERTSON.

GILT EDGE



stands for best when applied to furnaces. The many dealers who have installed and the thousands of householders whose homes have been heated by our furnaces show they like the Gilt Edge, as will be seen by the testimonials they have written. Let us send you a few of them.

The Keystone Joint used in Gilt Edge Furnaces is the only permanent gas tight steel and cast iron joint on the market.



R. J. Schwab & Sons Co.

MILWAUKEE

Monarch Air Blast Furnaces.

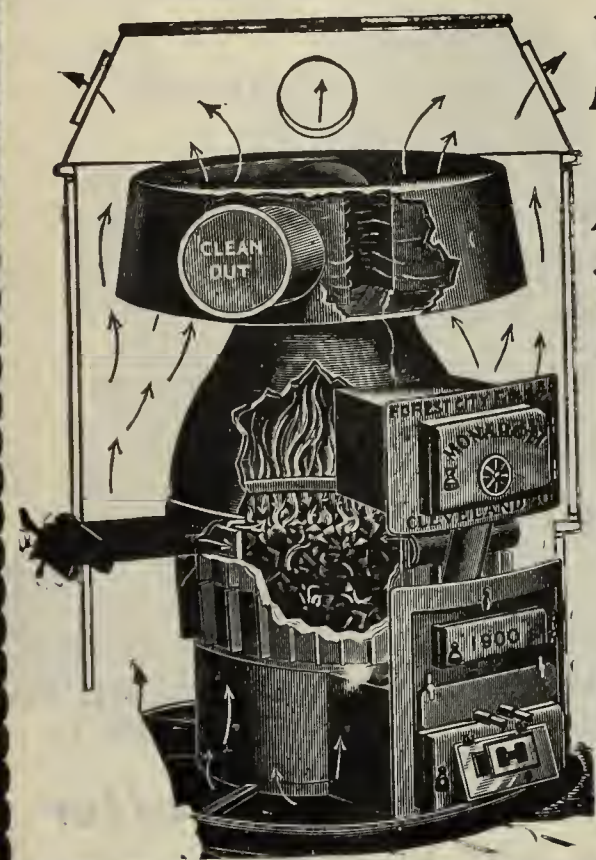
All Cast Iron.
For Hard and Soft Coal.

Send for 1902
Catalog and discounts.

The Forest City
Foundry and Mfg. Co.

81 Elm Street,
CLEVELAND, OHIO.

Gray Iron Castings to order. High
grade only.



Pierce BOILERS and RADIATORS

for Steam and Water Heating.



Pierce Improved Florida Steam Boiler.
LARGE HEATING CAPACITY.
ECONOMIC IN FUEL CONSUMPTION.

Endorsed by the foremost Architects
and Heating Engineers.

Write for New Illustrated Catalogue.

Pierce, Butler & Pierce Mfg. Co.,

Syracuse, N. Y.

New York. Boston. Philadelphia.

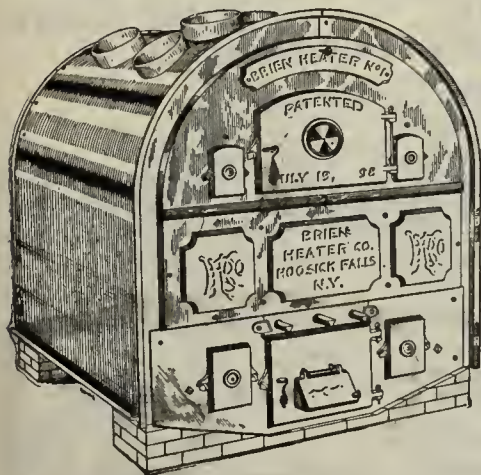
Brien Heater.

A perfect, all cast WOOD or
COAL burner. There is no
other Hot Air Furnace as
low down as the "BRIEN."

Write for territory, catalog and prices.

BRIEN HEATER CO.

HOOSICK FALLS, N. Y.



Portable OVENS

FOR
CORE BAKING,
JAPANING,
ENAMELLING, Etc.

OVENS FOR Bakers, Confectioners, Hotels, Etc.

Made in all sizes, single and double, for coal, wood,
natural or artificial gas.

SEND FOR CATALOGUE.

The G. S. BLODGETT CO., Burlington, Vt., U. S. A.



ROBBIN HOT WATER HEATER.

For heating dwellings and other
buildings; also for greenhouse heating.

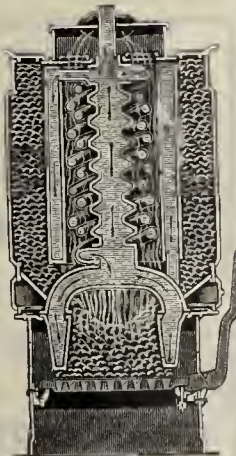
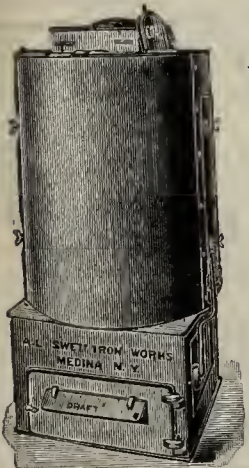
SAVES FUEL,

and is a success in every way.

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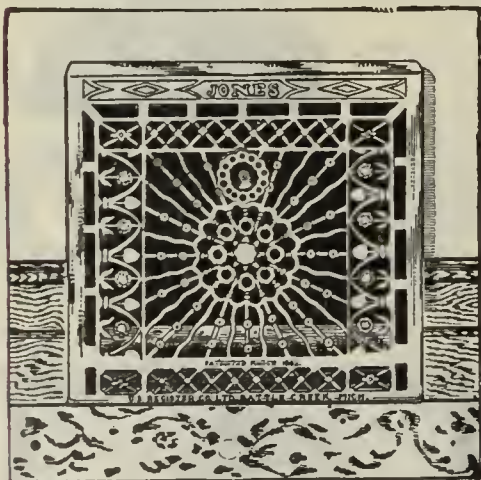
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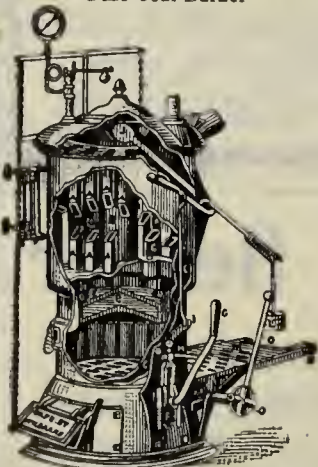
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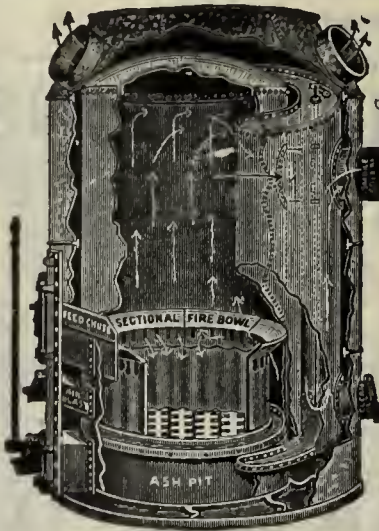
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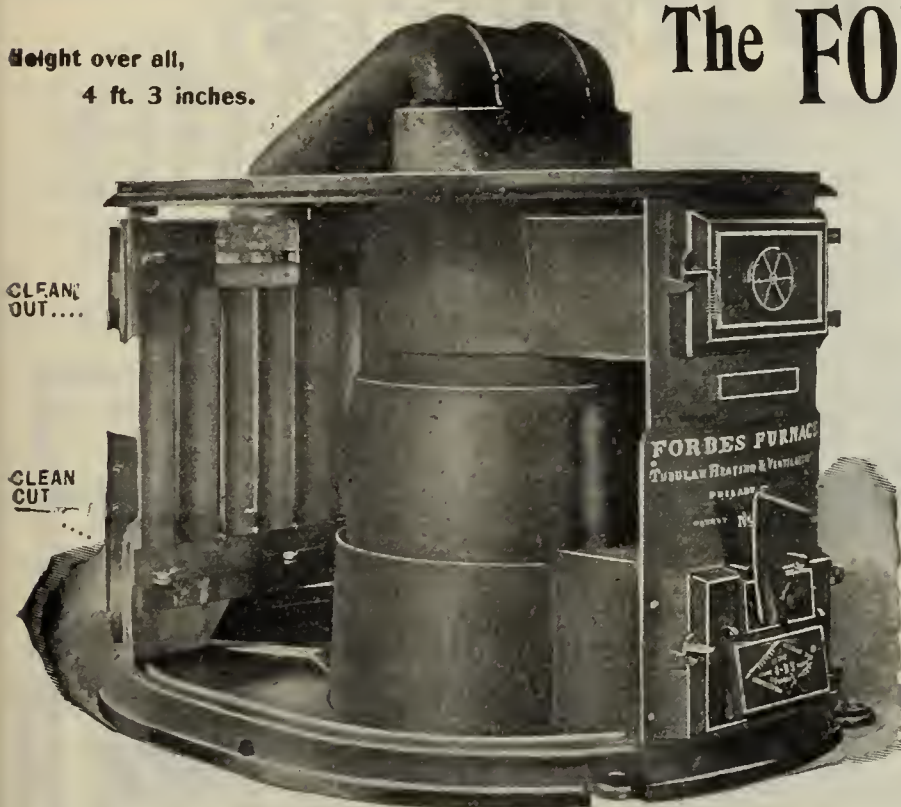
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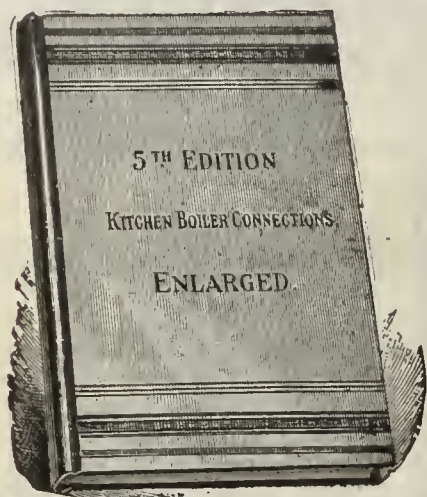
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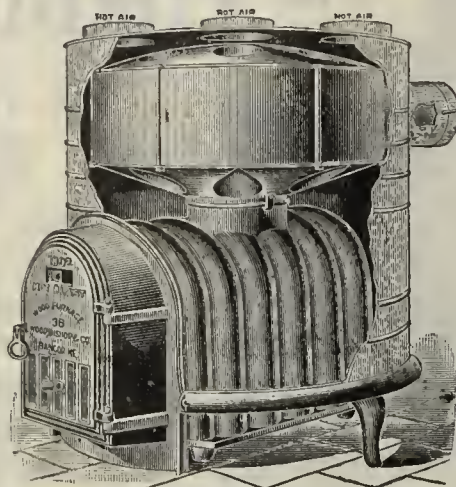
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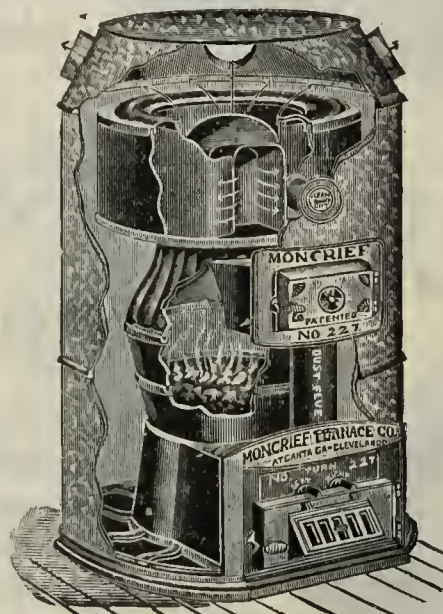
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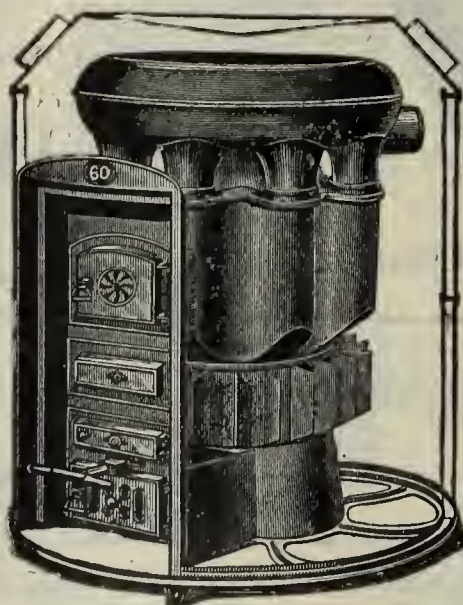
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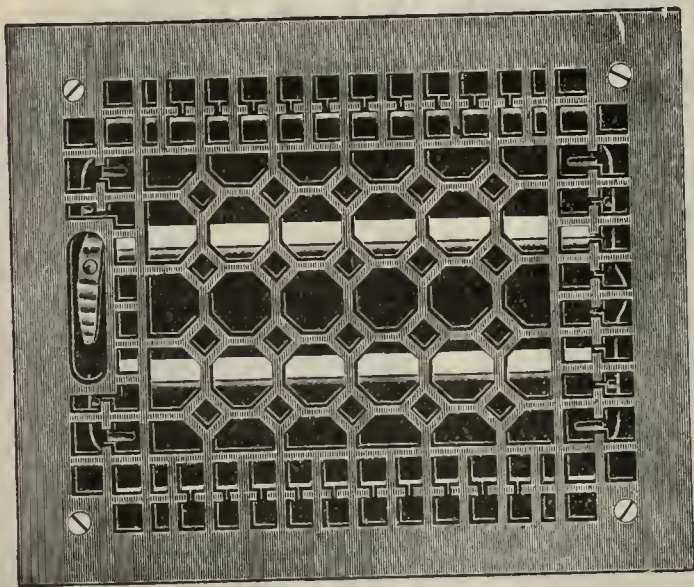


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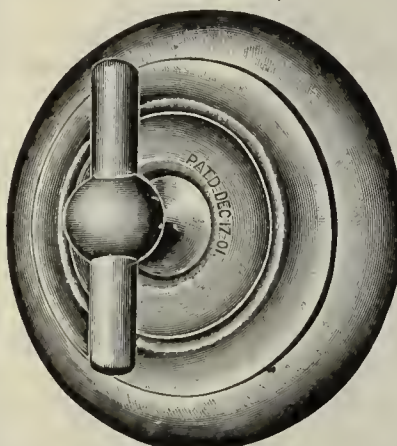
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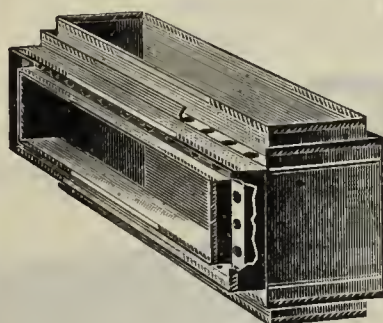
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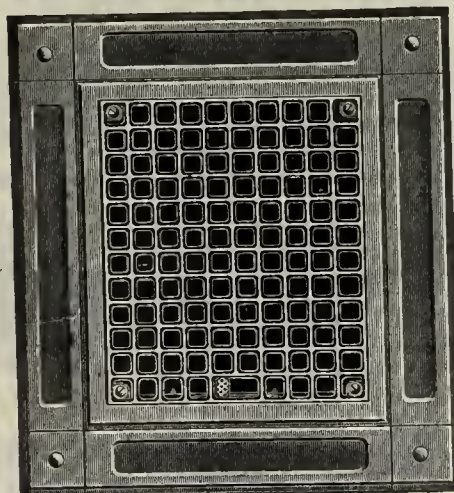
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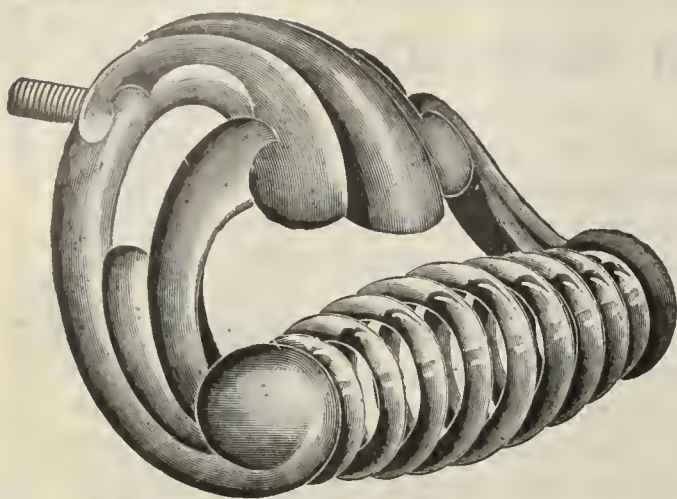
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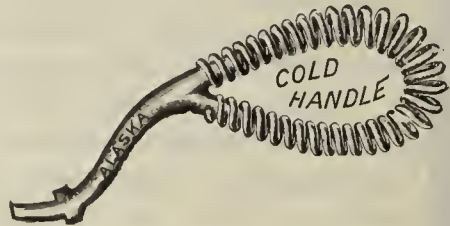
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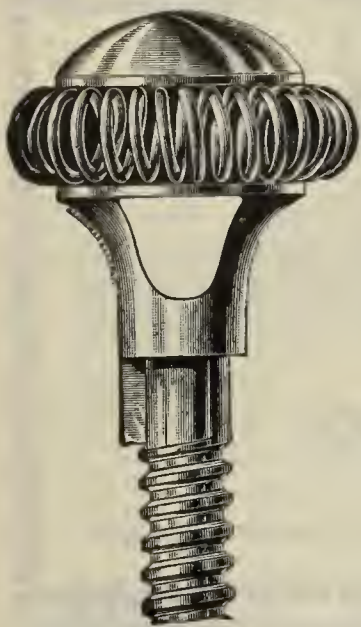


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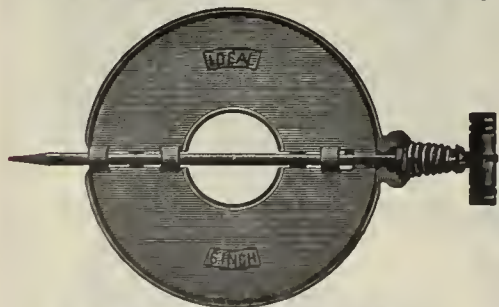
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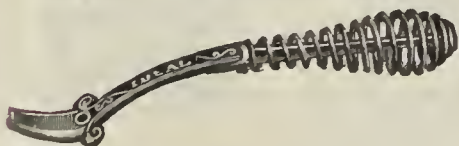
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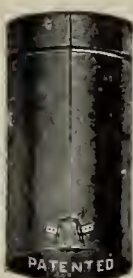
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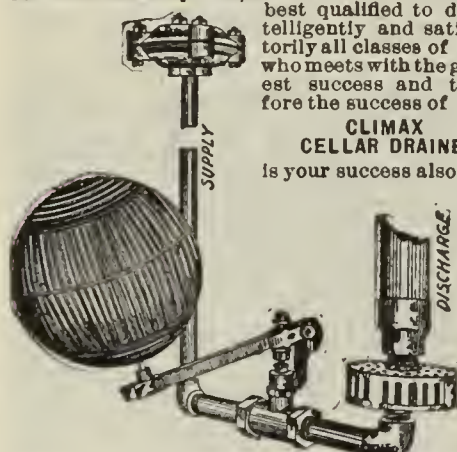
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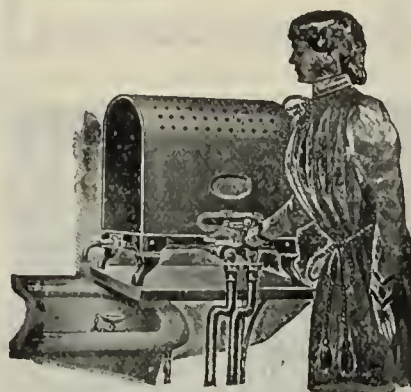
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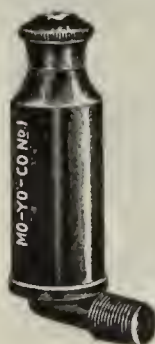


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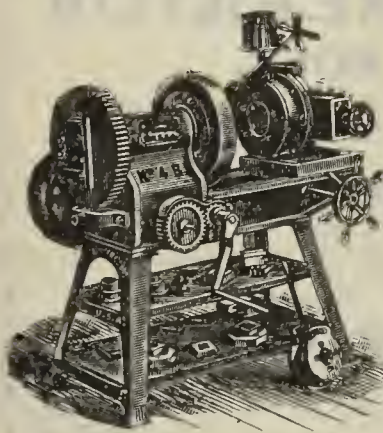
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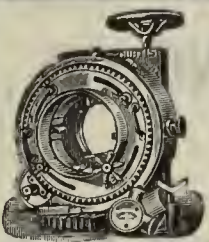
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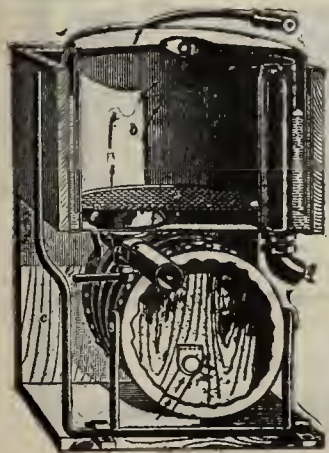
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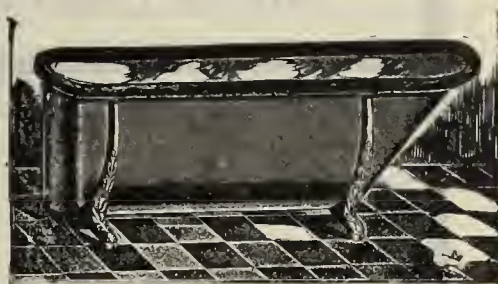
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NEW YORK AND CHICAGO.

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Volume LVIII.....No. 4
Index to Reading Matter.....Page 67

No General Strike of Coal Miners.

The decision of the convention of United Mine Workers at Indianapolis last week not to declare a general strike of coal miners relieves the business situation considerably. Although it may be the general belief that such a strike would not have continued for any great length of time, as available strike funds would have soon been exhausted by the heavy drain on them, yet the suspension of all coal mining for even a week or two would have seriously dislocated the business of the country and caused enormous losses. Happily, we are spared this affliction, and have but the minor problem, which is nevertheless an important one, of the duration of the anthracite miners' strike. This has now been running over ten weeks, and seems likely to continue considerably longer, especially if the operators are not inclined to depart from their policy of waiting for the miners to starve themselves into defeat. The United Mine Workers have pledged such financial assistance to the anthracite miners that if all union miners who are now working pay their assessments the funds thus secured will encourage the anthracite miners to hold out. A strong appeal has also been addressed to the public by the miners' convention in the hope that substantial contributions can be secured from those who sympathize with the strikers. But assessments are always hard to collect, and it will be very remarkable if the appeal to the public results in a response which will be deemed even fairly satisfactory by its authors. The amount required to sustain the striking miners is so vast that it will not be surprising if the funds forthcoming from the working miners and the public should prove so seriously inadequate as to discourage persistence in striking. In that event the end would not be far off.

Prepare For Fall Trade.

It is not too soon for the enterprising tradesman to begin preparations for the fall trade. The people will be just as backward as heretofore in getting their work done, and when the time comes they will all want it taken in hand at once. If efforts are made to induce some customers to have their work taken in hand early the result will be a better profit for the year than can otherwise be made. Of course all well established tradesmen have arranged for a sufficient stock of goods. Those, however, who have not done so should lay in a careful assortment of stoves, sheet iron, tin plate, stove pipe, elbows and supplies in proportion to their capital and credit, and this stock should be arranged conveniently

for quick handling. The next necessary thing is to get the workmen into the spirit of the occasion by impressing them with the fact that their best workmanship, greatest care and unfailing courtesy are among the essential factors that make a shop popular and their work steady. When the stock is arranged for and the men selected, the important business of getting the work in early should be taken up. The apathy due to summer weather must not be allowed to impede active efforts to induce people to be forehanded. Circulars calling attention to the desirability of undertaking stove repairs, putting the heating apparatus in readiness, painting the roof to stand the winter storms, fixing the eave trough and gutters, and so forth, left at the residences or mailed to those who are out of town, will secure many an order, not only for the goods mentioned, but probably for many other things also. The advertising columns of local papers can also be used to good advantage in bringing a man's trade to the notice of property owners and housekeepers. Circulars and newspaper notices should say just what the people ought to have told them, and they will take advantage of the advice to the profit of the enterprising tradesman. This custom has been followed by some plumbers, tinsmiths, roofers and stove dealers for a number of years, and those using it have increased their trade and made more money each year.

Quality in Demand.

One growing tendency of the American people, which is a gratifying indication of advancement in knowledge and refinement, is their increasing appreciation of what is good, in a material sense. It is a certain token of progress when people show dissatisfaction with that which is cheap and of inferior quality and reach out for the best that their means will permit them to acquire. The diffusion of knowledge, which brings with it refinement of taste, is probably the main cause of this desire for better things, and this spread of knowledge is going on more rapidly than ever before in the history of the country. That many of the manufacturers of goods in the lines represented by this journal are coming to recognize this tendency and are catering to it is demonstrated by the character of the products shown in the latest catalogues and circulars. It is noticeable, in connection with recent trade literature that cheapness is not being pushed to the front so much as it used to be, and that attention is being more generally called to excellence of quality. Manufacturers and dealers report that the demand for high grade products has been increasing with pronounced rapidity in the past few years. Consumers, they say, are showing a more marked appreciation of quality, and do not call to anything like the former extent for cheapness in goods. They are beginning to demand the best their purses can afford. The present generation, too, are better informed, through their higher education, than were their parents as to the merits and advantages of good goods, and their taste is more cultivated. Added to this is the fact that the people to-day have more money to spend and are consequently better able to gratify their tastes. The progressive manufacturer and tradesman would do well to bear these facts in mind and help along the good

work, by pushing their high grade goods as much as possible. Not only is there more profit for them in the sale of such goods, but the satisfaction their use will give to the purchaser will naturally be an inducement to them to further patronize the sciler of first-class products.

Employers and Employees.

That courteous treatment should prevail between an employer and his workmen will be conceded by all fair minded men. Anyone of any business experience is aware that harshness of treatment too often results in a bitterness of feeling on the side of both parties concerned. It is probable that under the strenuous business demands of the present day some men do not take the time, that surely would be well spent, to cultivate a cordial understanding with those with whom they are in daily contact. This has probably often led to a lack of consideration in cases where to give it would be only just, which has resulted in an indifference on the part of employees to the interests of their employers that has been a disadvantage to all concerned. That this feeling exists among many employees is palpably true, and it is also true that in too many instances it has been developed through neglect of their interests by those who employ them. Not infrequently, however, such employees, in changing from one employer to another, do not alter their course of action in accordance with their circumstances, and it is possible that an employer was suffering from some such unjust treatment when the following letter was penned to us:

Of late years I have noticed that journeymen have got less honorable than in former years. The job I have to offer is a steady one and at fair wages; and I find no fault with any man for leaving his employment to better himself. But does he not owe to his employer the consideration of at least letting him know his intentions, so that he can make his departure honorably and decently, instead of sneaking away in such a manner as only a mean man would, without saying a word, and thus leaving his employer in the lurch for a time?

Beyond doubt such treatment as is referred to by our correspondent is unfair, and while there is no proverb to the effect that two wrongs make a right, it is equally true that, in some instances, retaliatory action in return for a wrong would start the original infringer on the right line of thinking. If "honor to whom honor is due" was more frequently the motto of employers, then conscientious, honest, competent workmen would less frequently have their better feelings hurt or outraged. There are two sides to the question presented by the letter above quoted, and there is no doubt that it can be studied with advantage from both sides, when the wisdom of more generous and courteous treatment will readily be seen.

INTERESTING PHASES IN THE IRON INDUSTRY.

It is interesting to note the evolutionary process in the iron and steel industry as reflected in the markets for raw and finished material from week to week. The unprecedented demand for all sorts of iron and steel, in conjunction with the policy adopted by the large consolidated interests—to allow only a narrow margin between the prices of raw and intermediate products on the one hand and finished manufactures on the other—has made a readjustment among independent concerns necessary. During the past six months dependent consumers of steel billets and steel bars have met with more or less difficulty in obtaining adequate amounts of steel billets and bars, notwithstanding the increased production of open hearth billets noted in January, and in not a few instances mills have been compelled to suspend operations from time to time. These conditions have opened markets throughout this country to foreign steel, and not a few of the most important mills have only been able to continue in active operation by

consuming foreign material. Yet more or less difficulty has been encountered and the result has been the further building of many new domestic open hearth furnaces, it being estimated by those thoroughly conversant with the situation that by January next the production of open hearth steel will have been increased from 50 to 60 per cent. over the output of the previous year.

At the moment the closing of many mills for the usual summer repairs is reducing the consumption and causing the resale of both domestic and foreign billets, while European dealers and producers of billets are offering their products here more freely than ever—for July, August and September shipment—through personal canvass. The result can scarcely but be reduced prices, at least temporarily. But the present difficulty in obtaining adequate supplies of pig iron, notwithstanding the continued large output of the blast furnaces and the relatively light supply of scrap available, is introducing new elements calculated to retard the rapid expansion of the production of open hearth steel.

It is estimated by manufacturers of steel rails that the requirements of the railroads for rails for the year ending June 30, 1903, will be at least 2,000,000 tons, 1,000,000 tons of which already have been placed with the four rail producing interests. Of this amount about 1,250,000 tons, it is thought, will be required for renewals, the balance for extensions. Of the 1,250,000 tons probably one-fifth will be utilized for relaying. This means that only about 1,000,000 tons of scrap will be available for remelting from this source next year, and, aside from the railroad material, there will be a relatively small quantity of scrap available for the open market.

Should the enormous consumption of pig iron of the current year be continued—and it is estimated by the largest interests that the demand will continue for another year at least—manufacturers of the finished material outside of the large interests which control their own ore and coal mines and coke ovens will find themselves in an unprotected position.

Because of these facts not a few interests outside of the consolidation are purchasing iron mines and making determined efforts to provide ample fuel, recognizing that they must be independent of the large companies, whose policy it is to consume their own products of raw and intermediate material.

It is also learned that steps have been taken by large independent interests to build converters and manufacture structural shapes.

With the present slow deliveries of pig iron, the scarcity and high prices of pig iron for immediate and nearby delivery, the high prices of scrap and a stringent market, it is somewhat of an anomalous condition to find the bar iron market so weak. It must be that much of the bar iron now coming on the market has been produced from lower priced pig and scrap. It is a well-known fact that the bar iron being sold on a lower basis than 1.75 cents cannot now be replaced except at a loss, the ratio existing between the present market prices of iron bars and scrap showing a narrower margin than ever before. Still the active competition between manufacturers of bar iron and manufacturers of soft steel bars is so keen that the largest bar iron producers seem willing to meet the issue, being evidently of the opinion that it is better to hold the trade against steel, even at a sacrifice of profit, than to advance prices and run the risk of losing business, they recognizing that the maintenance of prices of steel bars at a lower level than iron bars by the largest interests is an effort to force the consumption of steel at the expense of bar iron. It is notable, however, that a respectable minority of bar iron mills take exceptions to this policy, having confidence in their ability to meet the competition of steel even at a moderate advance in prices. It is an interesting trade war, in which the chemist and the scientific mill practitioner have important parts assigned.—*The Iron Age*.

Bulletin No. 3, issued by the University of Texas, Austin, Texas, is devoted to an exhaustive analysis and description of the qualities of the coals and lignites of that State.

WHAT THE STOVE TRADE NEEDS.

We have received the following communication from a correspondent who lies awake at nights trying to evolve some scheme for the benefit of his own stove trade and incidentally that of his fellow citizens who are engaged in the same line of business:

The stove manufacturers are to be congratulated that they have one among their number who knows the stove business and what its needs are, and the sure possibilities for making big money if his plans are carried out. In his communication to *The Metal Worker* last week, under the caption "A Stove Captain Needed" he says:

The stove industry is one of far greater usefulness than the manufacture of steel rails, structural steel and other products made by the United States Steel Corporation, for every family must cook to eat and must eat to live, whereas railroads do not have to be built, neither is it compulsory to erect buildings, or even if a building must be erected it need not be composed of steel frame construction. On the other hand, every wooden or brick house contains one or more of the products of a stove foundry; this, however, is not necessarily the case with the products of the United States Steel Corporation.

What do you think of that? The idea of a lot of capitalists and other people pottering around building useless railroads and putting up buildings of steel frame construction when there is no necessity for it! Nothing has ever appeared in *The Metal Worker* that has struck at the root of the business and shown its immense possibilities as this communication has done. Look at it. "Every house contains the product of a stove foundry, but this is not the case with the product of the United States Steel Corporation;" and to think, as he says, that the whole shooting match has been run by "the buyer and the Molders' Union; and the poor devil of a manufacturer has little to do with it." Gospel truth, every bit of it; and, mind you, this does not come from a greenhorn, but from "one who has been in the business all his life."

Here we have had a large body of stove makers meeting every year, and they are generally informed by some observant brother "that its members cannot be surpassed in point of intelligence and respectability, &c.," yet they have allowed this state of affairs to prevail. He also asks that conundrum, "Why cannot stoves be exported, when nearly every other product is?" It's a measly shame, but it is a fact, and the heathen stoveless foreigners should be "stovangelized" by experts and forced to accept them. But there is one thing that must be done: no stoves should be sold abroad at less than prices ruling here. Let us be square and not imitate those men who are soaking the people here and selling the foreigners for 50 per cent. less. Full prices and no freight allowance should be the rule.

How are you going to get at the thing and put it on a money making basis? As he quotes, the "United States Steel Corporation expect to make \$140,000,000 this year," and he wonders "where the stove business comes in." As he puts it, the "buyer and the Molders' Union get most of the earnings now." Well, here is his remedy, and it is all right, you bet:

The stove business needs a captain, and needs one quickly. It needs a captain who will gather the scattered soldiers who are all fighting on their own account, and fighting each other at that, and bring them into a harmonious company and march them on as one man, shoulder to shoulder, to the success that should come to hard and earnest workers. Where can the stove business find such a captain? Does any one know?

Does any one know? Sure, Mike. Why just put an ad in *The Metal Worker*, stating your wants, and I will guarantee the man will be found. I would be willing to wager my whole week's wages (\$6) that there isn't a stove concern in the United States that hasn't got one or more of the material that could give the Lord points, let alone officerizing such a community of interest as this would be. Where did Cholly Schwab come from but out of the back woods? At the same time your correspondent is entitled to an excuse. No man could grasp his great scheme and the possibilities of *The Metal Worker* at the same time.

H. SMOKE.

The July 19 issue of the Canadian *Hardware and Metal* of Montreal and Toronto is a special stove and

heating number. Our contemporary has shown much enterprise in collecting information relative to the stove and kindred interests of Canada, indicating the flourishing condition of business in the Dominion. We observe that the columns of *The Metal Worker* have been drawn upon to some extent. This is gratifying, but our gratification would be increased if proper credit had been given for all the matter thus taken. The article on "Handy Furnace Rules and Calculations," specially prepared for *The Metal Worker* by James A. Harding, appears, we regret to see, as if it had been written for *Hardware and Metal*. We trust the omission of credit in this instance was an oversight.

A FURNACEMAN'S REPUTATION.

BY J. S.

Having borne the brunt of the strain that is felt by every man who endeavors to do only good furnace work I am thoroughly conversant with the temptation which confronts many a furnaceman when he is asked to stamp with his good name furnace work that does not measure up to his ideal, or to his standard. A little financial stringency, caused by bills falling due or some other equally potent influence, tempts some men to grant the requests for cheap prices and cheap work from men who have no interest in the final welfare of the purchaser or the trade. Having a shop in a large city with a large suburban district, I have succeeded in the past 20 years in building up a custom furnace trade by doing the best work that I knew how in every instance and charging a price in accordance. Had I not thoroughly mastered hot air furnace heating I should not have been able to satisfy my customers in such a manner as would enable me to secure a satisfactory profit on every job. In spite of the active canvass for steam and hot water heating apparatus made by salesmen and representatives of the local heating contractors, I have had for the past two years all the work that I could do, without solicitation. I frequently secure customers who have been recommended to me with the statement that my work may cost a little more, but that without question the final result will be satisfactory.

This preface to a little episode is not given from egotism, but rather to more forcibly illustrate how some operation builders and other unprincipled people will impudently ask that such a reputation be sacrificed for their pecuniary benefit. In the case in point, a man who was building a dozen fairly good houses invited me to give him a figure for heating them. After getting it he asked me the price on a 36-inch furnace, my price having been made on a 44-inch furnace, which the houses needed to be satisfactorily heated. On being told the price he asked whether I could not put in the smaller size of furnace so that the cost would be within the figure which he desired to pay for the work, and which had been made by a competitor who has not yet established a reputation, and who is satisfied with a small profit in hand.

I asked him to whom complaint would be made if the furnaces failed to satisfy the purchasers, and whether he would in any way suffer by it. He replied that he would not, for if the buildings were sold he would have no interest in the question. I asked him how he thought the matter would affect me, and he shrugged his shoulders. I then told him that under no consideration would I put into those buildings, or any others, a furnace heating system that, according to my judgment, would not be of sufficient capacity and contain a heater of a size that would give satisfactory service. He was quite disgusted at what he called my pigheadedness in turning down an order and a profit which I could make in the interest of people that I did not know and might never see.

This little episode may interest furnacemen who are invited to allow their reputation to be put to the base uses of men who have no interest in their welfare, and it may encourage less experienced furnacemen to take the proper stand should they be approached in a similar manner. If it does, I shall feel that my contribution has not occupied space without advantage.

Shop Conditions.*

BY HUGH M PHEE, BRIDGEPORT, CONN.

Taking the average foundry of the present day, generally speaking, we find conditions existing that are not creditable to either employer or the foreman in charge. A lack of interest, it seems to me, is the cause of this. The molder and apprentice, in my estimation, should not be held responsible for this, for we find that the improvements in all the other departments of great manufacturing concerns result in benefit to both employer and employee. Unfortunately these results are not met with in the foundry. Not that less work should be done, but ways and means should be provided to increase the efficiency of a shop. This, I think, can only be done by a combined effort on the part of the employer and his foreman to make the conditions such that the employee can have a place to work in that will give him heart and interest to do better than he ever did before.

Take the molder who commences at 7 a.m. As he strips for work, he hangs his clothes on a spike driven into the wall as near his floor as may be convenient. Many times these clothes drop to the floor, and no one bothers with them. Now he finds his flask shaken out during the night, but must tear the castings out of the sand, wet this down, get his shovel and temper his sand pile so that he can commence to mold. By the time he is ready to mold a day's work he is played out, but by dint of practice and the necessity of doing so he labors on with only one outlook before his mind—quitting time.

Now we know that things are usually severe enough to bear even with the best of conditions, for we all have had more or less of just this experience. Believing that a remedy is absolutely necessary, let us look at the conditions prevailing in the machine shop and the pattern shop. A machinist has a specified machine to operate, with helpers conveying the castings to be finished to him, keeping him supplied with material to perform his share of the production. Producing finished work gives him an interest in it which is of benefit to his employer. The same holds true in the pattern shop. The pattern maker has a bench to work at. His lumber is brought to the shop, laid down convenient to the saw and planer. He can get his material without any special exertion; in fact, everything is placed for him in such a way that he has only to perform the work that his trade demands.

Now, why cannot we have some such conditions existing in the foundry? This is in itself a less despicable place to work in on account of the dust and dirt. Have a place for each man to hang up his clothes in, so that he can wear good ones. Have his floor in the same condition as the machinist has his—ready to begin work on. Let helpers prepare his sand pile so that he can commence molding and not act in the capacity of a laborer the first two hours of the day. Let his castings be shaken out for him, his flasks be fixed up. He can then put in eight hours molding instead of six, and get out superior work and much more of it.

May this effort to present the subject in a somewhat different light result in awakening the interest of my foundry colleagues, and some action be taken toward the improvement of the conditions surrounding the molder. Then the trade will receive greater recognition everywhere and stand second to none.

In presenting to the attention of the trade the merits of the Dighton Oak Furnace, the manufacturers, the Dighton Furnace Company, Taunton, Mass., state that the general type of construction is the same as their regular Dighton, which has established such an enviable reputation among dealers and house owners generally. The Dighton Oak is made especially for burning wood, but is also well suited for coal, coke or gas, according to circumstances. The wood grate is not fastened to the fire pot or coal grates, but rests upon the triangular grate bars. By turning these bars the circular flanges on the under side come in contact with them just enough to thoroughly clean the fire. If at any time it is desirable to use coal, instead of wood, as a fuel, the grate can be instantly removed through the feed door.

* Read before the American Foundrymen's Association, Boston, June, 1902.

TAKE A LOOK AT THIS STOVE.

BY I. C.

Some of the readers of *The Metal Worker* may be interested in a scheme which I have found successful for attracting attention to the stove store at the proper season. It resulted in my store being the talk of the town and the securing of visitors who made purchases, bringing business that would otherwise have gone elsewhere.

Like most other stove dealers, I possessed a very dilapidated relic of former usefulness in the shape of a flat top cook stove with a reservoir. In order to make this stove assume the red, rusty look of abandonment I had given it one or two coats of vinegar, which had the effect of ripening the rust most beautifully. While this preparation was going on I made a large, square transparency, such as are most frequently seen in parades during Presidential campaigns. On the four sides of this transparency I placed the words, "Take a Look at This Stove." I arranged it so that it was lighted at



Take a Look at This Stove.

night. In the bottom of the fire chamber, in the bottom of the ash pit, in the bottom of the oven, under the top covers, and in the bottom of the reservoir, I placed cards bearing these inscriptions:

"You Would Not Want a Stove Like This. You Can Buy a Better One Inside."

"Is Your Stove a 'Has Been' Like Me?"

"Did You Ever Study the Conveniences of the Twentieth Century Cook Stove in the Store?"

"The Good Things of To-day Beat the Old-Fashioned Things of our Grandads."

The condition of the stove and the banner brought old bachelors and school children and lots of other people who had no particular interest in that old stove to take a look at it, for the curiosity of the original savage seems to have developed wondrously with civilization. Yet people noted for their neatness took the trouble to soil their hands and clothes in lifting off the covers, opening the oven doors and looking into the reservoir and ash pit to see if there were any more cards that they had not read. A good big percentage of them came into the store to have a talk about the enterprise of such a scheme.

I would say to any stove man who thinks he is excessively busy and is cranky and fussy in his treatment

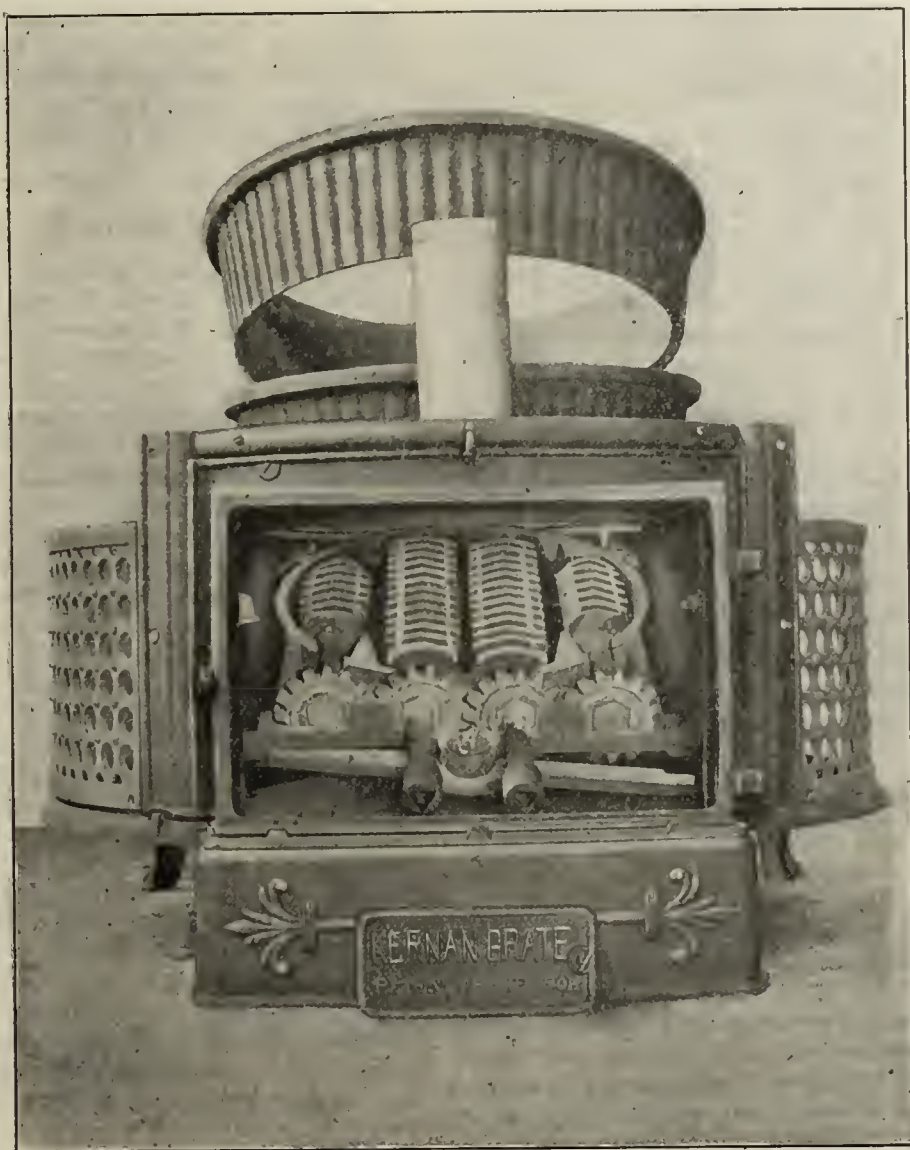
of customers, "You don't want this sort of attraction in front of your place." On the other hand, if he has a bright young salesman with some geniality in his make-up, he can turn these visits to account and sell all sorts of odd stock by bringing it to the attention of the curious when they are in an investigating frame of mind. That old stove at the front of my store is worth to me any two of the finest ranges with nickel trimmings, oven thermometer, and all the rest of the gewgaws that the stove manufacturers have crowded upon stoves now, that I have on my sample floor.

The Kernan Shell Bar Grate.

One of the important constructive features of the Welcome warm air furnaces, which are manufactured in a variety of sizes by the Syracuse Stove Works of Syra-

The McClary Mfg. Company's Proposed Enlargement.

We learn from the *Canadian Hardware and Metal* that the McClary Mfg. Company, who are large manufacturers of stoves, ranges and furnaces at London and Hamilton, Canada, have purchased in London the whole block of land inclosed by William, Nelson and Adelaide streets and the river, and a large parcel of land east of Adelaide. Within the block mentioned they will construct a series of buildings, wherein something over 400 men will be employed. This will rival in extent their immense establishment on King, Wellington and York streets. To carry out the proposed arrangements Trafalgar street will be closed. The plant will comprise a molding shop, mounting shop, power house and storage, a polishing shop and other smaller buildings.



The Kernan Shell Bar Grate.

cuse, N. Y., is the Kernan shell bar rotating and revolving grate, a general idea of which is afforded by means of the accompanying illustration, which represents the grate as it appears when dumped. The construction is the result of long and severe tests and the company state that for the first time in the history of heating apparatus they are able to furnish a grate of the shell bar construction, which allows the air on all sides to pass into and through the bars, giving to them on their three sides a fire surface which, it is claimed, causes a thorough combustion in the fire pot and at the same time, by the cooling effect of a complete circulation of air, preventing the bars from twisting or warping. The point is made that the Kernan grate bars are, without bolts, suspended within a removable frame, the construction being such that the grate frame or any bar may be easily replaced through the ash pit door. By reason of the perfection of combustion accomplished there are no clinkers, and, as a consequence, an economical consumption of fuel results.

The foundry will be about the largest in Canada, 200 x 230 feet. The mounting shop will be 75 x 300 feet, and the other buildings will be of proportionate dimensions. The plans have already been prepared, and the buildings will be thoroughly modern in construction and equipment.

The new plant is directly across the road from the rolling mills that are to be erected by John White & Sons, and both places will be on the new belt line that is to connect with the London & Port Stanley Railroad, by means of which the new enterprise will be brought into close touch with outside markets. The McClary Company intend to build also a subswitch that will run from the belt line right into the heart of their new establishment.

THE directors of the Shelby Stove Company of Shelby, Ohio, have voted not to accept other propositions, but continue in Shelby and increase the capacity of their plant by installing new machinery.

ADDITIONAL CLAUSES TO MOLDERS' CONFERENCE AGREEMENTS.

Following are the clauses added this year to the conference agreements in force between the Iron Molders' Union of North America and the Stove Founders' National Defense Association:

Clause 16.—The general trend of industrial development is toward employing skilled labor, as far as practicable, at skilled work, and in conformance with this tendency, every effort should be made by the members of the S. F. N. D. A. and the I. M. U. of N. A. to enable the molder to given seven hours of service per day at molding, and to encourage the use of unskilled help to perform such work as sand cutting and work of like character, when the molder can be given a full day's work.

Clause 17.—Inasmuch as it is conceded by the members the S. F. N. D. A. that the earnings of a molder should exercise no influence upon the molding price of work, which is set, according to well-established precedent and rule of conference agreements, by comparison with other work of like kind, the placing of a limit upon the earnings of a molder in the seven hours of molding should be discountenanced in shops of members of the S. F. N. D. A.

Clause 18.—Molders who may be employed as "cat skimmers" should receive at least the minimum rate of day wages prevailing in the stove plate foundries of the locality, but should they earn more than the minimum rate, computing the value of their output at the piece price rate, they should be paid the piece price rate.

Clause 19.—When a full floor of new work is given a molder he should be guaranteed the day work rate of pay for the first day, in order that he may be given an opportunity to get the job in good running order for piece work; if, however, the molder should earn more than the day work rate he should be paid his full earnings.

Clause 20.—Where a change of job is made the molder often loses considerable time and is put to great inconvenience through the necessary clamps, boards and other facilities needed for the job not being supplied to him promptly. We believe that in well regulated shops that should be made a feature of the shop management and should be a subject of favorable recommendation to the members of the S. F. N. D. A.

Press dispatches from Toronto state that the convention of the Iron Molders' Union decided against increasing the ratio of apprentices in stove foundries.

Monarch Gas Heaters and Ovens.

The American Stove Company, Monarch Division, Mansfield, Ohio, have issued from the press an exceedingly neat and attractive catalogue, illustrating and describing the Monarch heaters and asbestos lined ovens, which they are manufacturing in many varieties. The heaters are intended for using either natural or manufactured gas and embody features which cannot fail to command the attention of the wide awake and enterprising dealer. The Monarch Ventilator No. 164 has been improved for this season by the substitution of cast iron in the fire box section in place of sheet steel, the intense heat generated making this change necessary. The stove is fitted with two 15-inch burners, having four rows of gas orifices in each, which, it is said, produce such intense heat as to quickly set the incandescent brick clinkers glowing. The Monarch Triplex, an original and powerful heater of the tubular variety, has three 6-inch Russia iron radiator pipes, within which are located smaller tubes, each flattened at the lower end, forming the back walls of the burners. The Monarch combination heaters are in effect a combination of an open fire place and a radiator. Various other lines are shown, including some new patterns of the radiator type, as well as hot blast water heaters, asbestos lined ovens, &c.

J. ALLISON ORR of the Mt. Penn Stove Works, Reading, Pa., was one of the out of town Stove men in New York City this week, making his headquarters with J. M. Litchfield at the corner of Beekman and Pearl streets. Mr. Orr reports that his foundry is running with the usual summer regularity and that the popularity of the Mt. Penn line is reflected in the orders which are being sent in, although the coal question is now beginning to have an influence on the buying.

Mueller Furnaces in the East.

The L. J. Mueller Furnace Company of Milwaukee, Wis., report quite a favorable outlook for the sale of their heaters in Philadelphia. Their agent at that place, John S. Makin, formerly of the Makin-Kelsey Company, reports very satisfactory results in heating with Mueller furnaces some of the largest and finest residences in Philadelphia and vicinity during the past year. Mr. Makin is now installing a hot air heating plant, using a Mueller furnace, in the residence of ex-District Attorney George S. Graham at Bryn Mawr. This residence is one of the largest and handsomest erected in that section for some years. Mr. Makin also has contracts for installing heating plants in the new residences of C. Z. Hoag at Haverford, and H. D. Justi. The latter named is well known throughout the United States as one of the largest manufacturers of dental goods. During the 25 years that Mr. Makin has been in the heating business he has installed plants in over 2000 buildings in and near Philadelphia, and he styles himself "The Long Distance Heater Man." He is one of the pioneers in using the "battery system" of warm air heating by gravity in the State of Pennsylvania.

The Union Stove Works.

We have received from the Union Stove Works, 70 Beekman street and 66 and 68 Gold street, New York City, a copy of their stove catalogue for the season of 1902 and 1903. In offering this publication the company refer to it as marking another step forward. They point with pardonable pride to the continued increase in their business, due to the quality of their goods and a careful and constant study of the requirements of the trade. The printing is in black on a delicately tinted paper, while the binding is in flexible covers of neat design. Something over 60 pages are devoted to cook stoves and ranges, prominent among which may be noted the Bronx, a new range intended for using either coal or wood as a fuel. It has five boiler holes in the top surface, is made in two sizes and is ornamented in a neat and effective style. The Yukon, a six-hole range, is one of the later additions to the company's extensive assortment and embodies the modern features. Another novelty is the Astor No. 50 range, designed especially for use in flats and apartment houses. It is made in one size only and in portable form. The hot water circulating boiler is of the rivetless horizontal type, so as to economize in floor space. The stove is also fitted with patent swing gas cooking attachment for use when the weather is such as to render this form of fuel more convenient than coal. Double oven Astor ranges, adapted to meet larger requirements than that of the stove just described, are also considered. The Astor No. 80 is a new pattern made with six 8-inch holes and offered in portable form, as well as adapted for brick setting.

Among the heating stoves, the Flirt occupies a prominent place, as it has for many years past. The great popularity of these goods has led the company to offer the Angler, a new square base heating cylinder parlor stove, and the New Joy, a direct draft construction with draw center grate. These patterns embrace the many features originated and introduced by the company in cylinder stoves, together with devices which heretofore have been confined to the cast iron parlor stove class. All sizes, except Nos. 9 and 16, are made to take magazines, thus rendering them self feeders. Various other lines of heaters are shown, including the Rush, a new direct draft parlor stove, globe, cannon and laundry stoves, Baltimore heaters, Storm King and Commander furnaces, Astor hot plates, various forms of gas stoves and ranges, gas radiators, sad iron heaters, Lakewood oil heater, hollow ware, &c. The catalogue concludes with a price-list of brick linings, a table of approximate gross weights and cubic contents, created for export, of stoves, ranges, furnaces, &c.; code words and an index of stoves, alphabetically arranged.

Following these features attention is called to a new self feeding globe stove, which was brought out too late for classification in the catalogue. It is referred to

as a new idea in stove construction and is intended especially for offices, stores, elevated and surface railroad stations, saloons, restaurants, club houses, hotels, &c. It combines the essential features of the self feeding parlor stove with the large fire capacity of the globe stove, avoiding, however, the expensive parts of the parlor stove and the rough and uncouth elements of the ordinary globe stove. The result is a construction "highly artistic, of great heating power, moderate in price and absolutely different from any stove heretofore produced." It is made in four sizes and has fire pots 13, 15, 17 and 19 inches in diameter respectively.

Accompanying the catalogue is a price-list relating to the leading lines manufactured by the company. The matter is presented in a shape to be of the greatest convenience and value to the dealer, and gives evidence of having been prepared with special regard to the requirements of the trade.

ODD PLATES.

THE BRIDGE & BEACH MFG. COMPANY, St. Louis, Mo., have recently issued a circular letter to the trade in northern Illinois to the effect that their representative, John Le Page, was severely injured in a railroad collision on Saturday, July 12, and is now confined at the Cottage Hospital, Peoria, with a broken collar bone, which will prevent his traveling for a number of weeks. The company solicit mail orders from the trade addressed, for which Mr. Le Page will receive full credit the same as if taken by him personally. The company also state that any business with which the trade may favor them under the circumstances will be doubly appreciated by both Mr. Le Page and the manufacturers. We may add that as Mr. Le Page is one of the most popular of the traveling fraternity his customers will undoubtedly see that his interests do not suffer while he is incapacitated.

THE JOHN VAN RANGE COMPANY, Cincinnati, Ohio, call attention to the fact that their latest production in the way of Wrought Steel Ranges is the Pacific, which is made with six boiler holes in the top surface, high closet with rolling front, drop oven door, which forms a convenient shelf when open, and a fire box intended for using hard or soft coal.

THE CO-OPERATIVE FOUNDRY COMPANY, Rochester, N. Y., are offering many attractive patterns in the Red Cross line, which is referred to as combining "all the best features of modern Stove construction." The dealer is offered an extensive assortment from which to choose, whether it be in the way of Steel Ranges, Cast Cooks or Heaters. Among the latter may be mentioned the Garnet, a new medium priced base burner, offered in four sizes and as a single and double Heater.

THE BARSTOW STOVE COMPANY, Providence, R. I., point out that their Hot Air Furnaces are equipped with hot blast attachment. The gas ring around the fire pot is said to conveniently distribute a large volume of superheated air over the surface of the fire, this tending to complete a rapid combustion of the gases which usually escape through the smoke pipe. The claim is made that this form of construction also intensifies the heat from the fuel and prevents the formation of clinkers.

THE FRONT RANK STEEL FURNACE COMPANY, 2301 to 2309 Lucas avenue, St. Louis, Mo., construct the fire chamber in their Front Rank Hot Air Furnace in one solid sheet of closely riveted steel. It is lined above the fire limits with fire clay tiling, thus rendering it very durable. The radiators are large, with an uncommon area of heating surface in comparison with the size of the fire pot. The furnaces are built on vertical lines, the air coming into direct contact with the entire heating surface. Hard or soft coal or coke can be used as a fuel, according to circumstances, although the company also manufacture Furnaces for burning wood.

THE MICHIGAN STOVE COMPANY have issued Catalogue No. 32, which is supplementary to Catalogue No. 30 for 1901 and 1902, and is to be used in connection

with the latter book. Supplementary Catalogue No. 32 contains illustrations of new patterns only, with an index of the Stoves and Ranges of the Garland line.

CHAUNCEY CASTLE of the Comstock-Castle Company, Quincy, Ill., and president of the Stove Founders' National Defense Association, sailed last Saturday on the "Campania" for a European vacation trip.

THE trade will regret to learn of the death of J. W. Dow, treasurer of the Novelty Mfg. Company, manufacturers of Oil Stoves, at Jackson, Mich., which occurred on Thursday, July 17, after a brief illness.

HENRY GLEASON, who is known to Stove manufacturers everywhere, paid visits to the Stove trade in New York City this week, introducing A. T. Matthews of the Matthews Mfg. Company of Worcester, Mass. As they were giving confidential information about some new things in the Stove Trimming line, it is probable that the burden of their information will be disclosed to the general public in due season.

J. Q. A. BUTLER of New York City, who has been in the Stove business for 52 consecutive years, has left his Beekman street salesroom in the charge of his son while he is enjoying his usual summer vacation at Montrose, on the Hudson.

CONTRACTS have recently been let by the Pioneer Stove Company of Columbus, Ohio, for a warehouse and office building to be erected immediately west of the power station of the Columbus Railway Company on West Spring street. The new building will be of brick and will cover an area 75 x 200 feet. About half the structure will be three stories in height, while the remainder will consist of one story and a basement. A wing will be added to this building, extending to the north, and later a similar wing on the west end. It is expected to have the improvements completed by September 1.

THE M. & D. RANGE COMPANY, Lake street, Chicago, have adopted an effective way to call attention to the M. & D. Gas Ranges. They have issued a little booklet containing 100 recipes of good things to eat, how to make them, and how to cook them. Among the good things are illustrations of the M. & D. Low Broiler and Elevated Broiler, Gas Ranges with water heaters, as well as Combination Ranges for coal and gas or wood and gas.

THE DANVILLE STOVE & MFG. COMPANY, Danville, Pa., have recently made a large shipment of Stoves to Honolulu, the consignment consisting exclusively of a Wood Cook known as the Hustler. The company have been doing quite an export business lately, shipping their goods to different South American and West Indian ports, as well as to Japan. The latter country is a new field for them and we understand a good business is in prospect. About two weeks ago the company sent to Japan a number of Prince Beaver Stoves, a construction which is very popular with the local trade and which, it is thought, will meet with a good demand in its new field.

THE THATCHER FURNACE COMPANY, 240 Water street, New York, are keeping up a correspondence with the trade interested in Furnace heating. They have just supplemented their little folder, entitled "Heating Arguments," with a letter stating that others have made money pushing the Thatcher Tubular Hot Air Furnace, and that it has a reputation for good work extending over a period of 52 years, so that it is now known by the best architects and builders, who use it with confidence. Its features of large heating surface, economy and satisfactory operation are also mentioned. The trade who are looking for the best thing in the Furnace line are invited to investigate it. The letter closes with the suggestion, "Do it Now."

A VERY attractive catalogue of 48 pages, which has just been issued by the H. Adler Company, 241 First avenue, Pittsburgh, Pa., sets forth in pleasing style the merits of their Acme, Lustre and Duquesne Stoves, also their line of Gas Ranges, Cookers and Ovens. Many

new and handsome designs have been added to the company's already extensive assortment, these embodying the latest improvements. Among the recent additions may be mentioned the Relda, a neat design of cast front closed Stove, with center tube arrangement, which is offered in three sizes; the Iona-Acme Gas Range with closed top, for using natural gas, made in two sizes; the Lustre Backwalls, designed for open grate fire places and made entirely of stamped steel, upon which is placed asbestos fiber, and the Iron City, an improved design of open front construction intended for using natural gas as a fuel. The text appears in two colors and the arrangement of the catalogue gives evidence of careful attention to the wants of the trade.

THE SIMPSON STOVE & MFG. COMPANY, Pittsburgh, Pa., are sending out a folder printed in colors, bearing upon the front page a picture entitled "Almost is Not Quite." It represents a fierce looking bulldog straining at the full length of his chain to secure a roast chicken which is temptingly displayed a few inches beyond his reach. The text within the folder bears the same title, but relates to business matters instead of roast chicken. The statement is made that the business the dealer does not quite secure is not doing him any good. What every man needs is the goods that clinch the sale—the goods that are so attractive people cannot get away from them. The inference to be drawn from what follows is that if Simpson Gas Ranges, Hot Plates, Ovens or Cookers are put in competition with any other goods of the kind the sale is made. As the company put it, "Merit, distinctive features and good talking points do the business." The company request those interested to send for catalogue and prices which they have issued relating to their goods.

FLOYD, WELLS & Co., Royersford, Pa., are distributing among their friends in the trade an interesting little pamphlet bearing upon the Bengal Furnace, which they manufacture in many varieties. Attention is drawn to a few commonplace points in regard to setting furnaces, after which the Bengal Heaters are described in a way to interest not only the dealer handling the goods, but the house owner who is thinking of installing a heating apparatus in his dwelling. The method of operation is interestingly described and the essential parts of which the Bengal consists are clearly illustrated. Attention is also invited to the Rosemont Radiator, which is referred to as economical in first cost as well as in operation. The large catalogue which the company have compiled for distribution gives a great deal of information of general interest to the furnaceman.

Sidney Shepard & Co.

The last of June witnessed the removal of the offices of the Buffalo Stamping works, of which Sidney Shepard & Co. are proprietors, from those previously occupied adjacent to their Clinton street plant to their new plant, which has been in the process of erection during the past year, in the southern section of the city on the line of the Erie Railroad. The company purchased a large tract of land and proceeded to erect an entirely new and modern plant for the manufacture of their extensive line of sheet metal goods. A large six-story warehouse, in which six freight cars can be loaded or unloaded at once; an enameling department covering the length of a city block, and one of the main factory buildings, together with fire proof storage rooms, boiler house, &c., have been completed, and are now fully occupied and equipped. Contracts were let last week for the second group of factory buildings, two five stories high and one six stories high, which will be ready for occupancy during the coming winter. All of the buildings of this new plant are of massive slow burning construction and embody in arrangement, construction and equipment the latest ideas and developments in connection with the manufacture and handling of this class of goods, which includes enameled ware, stamped, pieced and japanned tinware, galvanized ware, sheet iron ware, copper ware, aluminum ware, &c. Each department is run independently by its own electric

motor driven by Niagara Falls power, and the entire plant is brilliantly lighted by electricity from the same source. A most elaborate system of automatic sprinklers and fire protection has been installed and fire boat service is near at hand.

The new plant is especially well located, for besides side tracks on its own premises it is within ten minutes' carting distance of the main freight depots of all the great trunk lines centering in Buffalo and of the lake lines and Erie Canal. The old plant, employing 600 hands, is still being run to its full capacity and will continue to be occupied indefinitely, certain departments being removed and consolidated with similar departments at the new works, and the room thus made available occupied by enlargement of certain branches, which have been greatly cramped for space. The main offices and warehouse remain at 145-149 Seneca street, as heretofore, where the jobbing department of the business is carried on, as this house is one of the oldest and largest handlers of sheet iron, tin plate and kindred supplies in the country. The recent establishment of a house in San Francisco makes eight exclusively wholesale establishments from which the goods manufactured and sold by the firm are distributed—namely, New York, Buffalo, Chicago, St. Louis, Kansas City, Denver, San Francisco and Seattle.

Pennsylvania Retail Hardware Dealers' Association.

A special meeting of the Pennsylvania Retail Hardware Dealers' Association was held at the Monongahela House, Pittsburgh, on the 7th inst., President Moore presiding. C. H. Miller, chairman of the Insurance Committee, made a report, after which Mr. Simpson of Huntingdon was listened to on the subject of "Mutual Insurance." On motion of Mr. Bowers, seconded by Mr. Hegner, the report of the Insurance Committee was adopted. On motion of Mr. Miller, seconded by Mr. Byers, the second section of the by-laws was amended so that the admission fee to membership shall be \$6 in advance, which fee shall cover all dues until the next annual meeting. President Moore appointed an Entertainment Committee comprising J. H. Bowers, A. Q. Casselberry and W. H. Taylor.

After a recess for lunch the meeting reconvened in the afternoon. Samuel McKnight having positively refused to serve as a member of the Executive Committee, L. C. Fox was appointed by the president to fill the vacancy.

The salary of the secretary was placed at \$300 for the current year, contingent on sufficient funds being received to pay that amount.

The following persons were elected as directors of the Pennsylvania Hardware Mutual Insurance Company: C. H. Miller, Geo. L. Moore, Mr. Thompson, S. S. Bryan, C. J. Kirk, J. E. Digby, Geo. W. Hackett, J. H. Bowers, A. M. Gregg.

The following Legislative Committee were appointed by the president: S. S. Bryan, J. F. Frye, H. F. Robinson, John W. Seaman, J. B. Holderbaum.

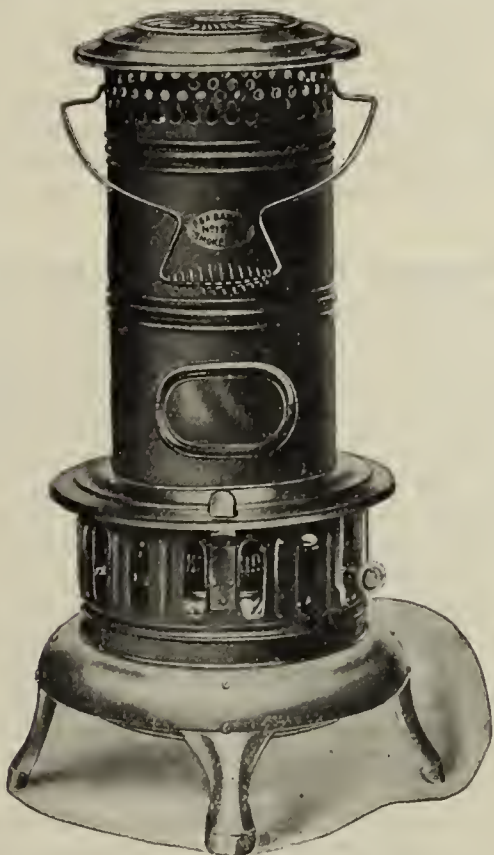
On motion of Mr. Miller, seconded by Mr. Fox, ten members of the association shall constitute a quorum for the transaction of business. The meeting then adjourned.

THE WEBBER-AYERS HARDWARE COMPANY have succeeded the Webber-Seeley Hardware Company and the Ayers Hardware Company at Fort Smith, Ark. The following are the officers of the company: Walter Ayers, president; W. W. Webber, vice-president, and John Ayers, secretary and treasurer. The company have been organized with a capital of \$150,000, \$142,500 paid up, and will do an exclusively wholesale business in Hardware, Shelf and Heavy, Stoves, Tinware, Agricultural Implements, Sporting Goods, Wagons, Buggies, Coal Miners' Supplies, Pipe and Fittings, Belting, Packing, &c. Ayers & Co. will continue to do a retail business in Hardware and related lines.

M. L. MONTGOMERY has purchased the Hardware and Tinware business of Wm. Graham, Crelghton, Neb.

Improved Banner Oil Heaters.

The Plume & Atwood Mfg. Company, Waterbury, Conn., and 29 Murray street, New York, have put on the market a group of improved Banner oil heaters, one of which is here illustrated. What especially distinguishes this make of heater is the automatic safety stop which prevents the flame from getting above the safety point. Neither will it smoke or give off an odor when



Improved Banner Oil Heater, Size 3.

extinguished, because, as shown in Fig. 2, the stop nut A limits the upward movement of the flame spreader B and the flame spreader B limits the upward movement of the wick. The wick, whether raised or lowered, always has a metallic rim resting on the top of it, the flame reaching the oil as it follows the wick upward at the side of the wick instead of directly on top, as is customary. Thus when the wick is raised for lighting the rim rests on the top and keeps it even, and when lowered to put out the flame is instantly extinguished, as the wick is then inclosed by metal both top and sides. The founts, which hold variously 3 pints, 1-gallon and

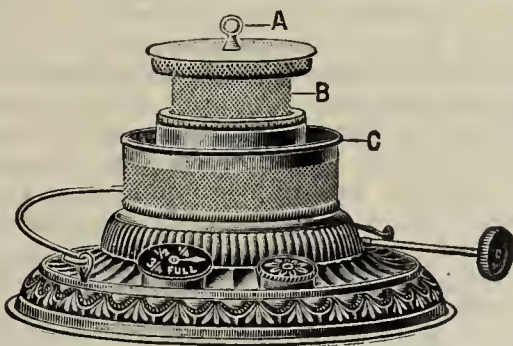


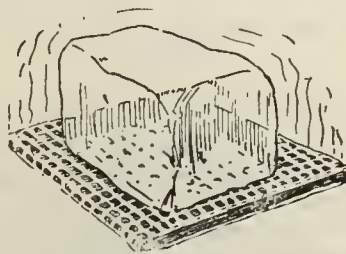
Fig. 2.—Burner with Automatic Safety Top.

2 gallons of oil, have an automatic filling indicator, by means of which the amount of oil in the fount is shown at any time from one-quarter, one-half and three-quarter full to entirely full. This is accomplished by means of an air tight float that in rising turns a partially twisted rod that moves the pointer at the top. The heaters can be supplied in different sizes, which for the purpose of approximating size are, roundly speaking, 19¼ inches high, with 6-inch drum, others being respectively 23, 25, 26½ and 33 inches high and proportionately larger in diameter. The smaller one has a 5-inch round wick,

the largest a 12-inch round wick and the three intermediate sizes 9-inch round wicks. All have wire balls for carrying and tip backward for lighting but one which is contained in an ornamental four-leg cast iron frame, something like a brass parlor table, and has a cast iron top. They are finished in japan and nickel.

The Savin Ice Pad.

A new invention for reducing the consumption of ice in refrigerators and ice boxes is illustrated herewith. The device consists of a chemically treated felt pad inclosed in galvanized iron wire. It is claimed by the manufacturers that it will absorb the odors arising from the ice box and prevent the usual occurrence of slime on the side wall. A saving of 33 1-3 per cent. in the consumption of ice is claimed by the company. Practical demonstration has shown that the temperature of a refrigerator is lowered several degrees with the use of the pad and that ice of the same weight will last much longer than in a box without the pad. The manufacturers state that there is nothing injurious in the pad and that water percolating through it can be used with perfect freedom. In use the pad is placed on the bottom of the ice compartment and the ice placed upon it, as shown in the illustration. The pads are made to fit any



The Savin Ice Pad.

size box, it being necessary, however, that an inch air space be allowed on each side for free circulation of air currents. The only precaution to be observed, it is remarked, is that the pad should always be kept in a moist condition, for if allowed to become dry it loses its chemical properties. The Savin Ice Pad Company, 1317 Columbia avenue, Philadelphia, Pa., are the manufacturers of the pad, which is now being placed on the market.

Sherwin-Williams Company.

The Sherwin-Williams Company, Cleveland, Ohio, are distributing an especially attractive counter book relating to their various paints and varnishes, also booklets, one of which is designed for the iron trade, while the other relates to Metalastic, their new product for metal surfaces. This is the company's old paint "P. M. 5" improved, retaining, it is stated, all the good qualities of the old paint with many improvements. It is referred to as a right combination of carbon, graphite and specially treated pure linseed oil for an elastic metal paint impervious to air and moisture. The company advise us that they have completed a large linseed oil plant and will soon begin crushing seed. They will not only make all the oil used by them in the manufacture of their products, but will also enter the general market.

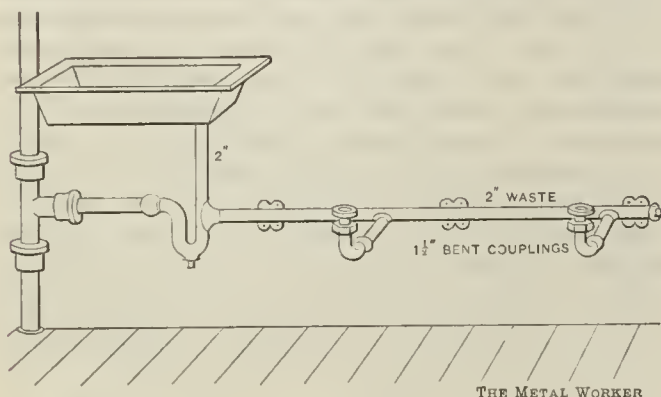
The Tryon Wrench

Geisel Mfg. Company, Springfield, Mass., who are making a line of hardware specialties, are now making the Tryon patent wrench, having bought the patent rights from the inventor. The tool is made of cast steel, nickel plated, and is a combination of monkey wrench, pipe wrench, tap wrench, bicycle wrench, drill brace and vise. The company state that there is no "give" to the jaws of this wrench, and that each feature of the tool is individually strong. It is referred to as a handy implement to have in the house, office or store, or to carry in a buggy, wagon, automobile or yacht, and as belonging in every mechanic's kit. It is made in five sizes, the largest size being 10½ inches in length.

TRAPPING WASH TRAYS AND SINKS.

BY D. F. N.

A great deal has been said at various times about devising some better method of trapping and running the waste pipe for a set of wash trays. From a practical point of view, the horizontal waste pipe under the wash trays should run on the wall at the rear of the sinks, the branches being taken out for the tub connection. The plugs in the tub should be connected with bent couplings and the pipe from these couplings should run into the waste line with a Y branch. This would prevent the waste pipe from being dented and mashed by pushing



Trapping Wash Trays and Sinks.—Fig. 1.—A Recommended Method.

small vessels or other articles under the tray. Such a connection has another advantage to be considered, which is this: In my experience I have never met with a case where it was necessary to remove an old trap and replace it with a new one under a sink where the waste pipe from the laundry trays was connected into the heel of the trap, as shown in Fig. 1. When the connection is made as shown in Fig. 2, it is not uncommon, particularly when the vent pipe is taken off short out of the crown of the trap, for it to become choked with grease and slime, which eventually congeals, making quite a solid and complete plug 4 or 5 inches long in the vent pipe.

The best way to arrange the work is that shown in Fig. 1, and it gives the least trouble to the plumber in its

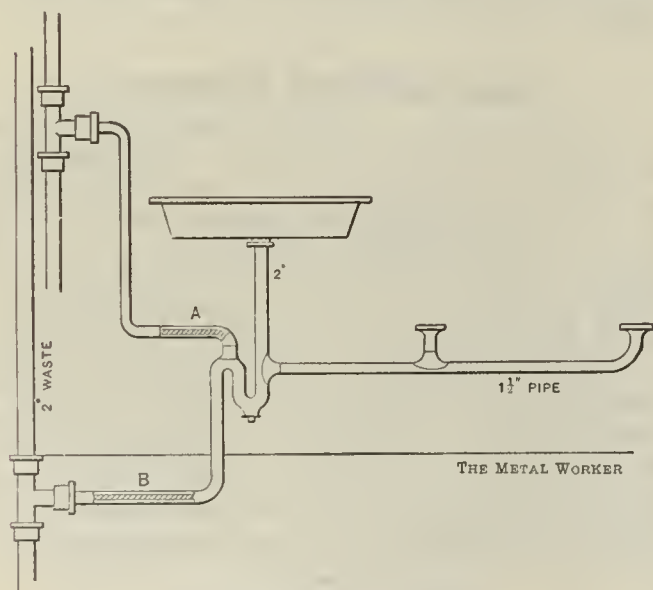


Fig. 2.—A Faulty Method.

construction. This plan allows the 2-inch vertical waste pipe to be run in the partition behind the tubs or sink, leaving a branch at a proper height to receive a half S trap from the sink, and the waste pipe from the tubs to be connected into the heel of the trap. Of course, the vertical waste pipe should run up back of the sink and the trap be connected into it, instead of being extended along as shown in Fig. 1, which is presented in that way so that the principle involved can be better understood. By this arrangement the bent couplings at the tub will cause a sufficient fall to allow the water in these pipes to drain into the waste and that into the trap at the sink, so keeping these lines free and clear of water. At

the end of the waste, under the tubs, a clean-out screw can be placed which can be opened whenever necessary to clean out these pipes. The branches from the bottom of the tub can be readily cleaned from the inside of the tub.

Such an arrangement will enable the waste pipes to be properly trapped, while it also provides for the removal of any obstruction that might occur in them. This method of arranging the piping would also allow the tubs to be removed or replaced, also the sink, by one plumber, without help, should occasion require, and the waste pipe would not be in the way in handling the work. Fig. 2 shows a method of arranging the piping which would be in the way in case the tubs had to be removed. It also shows an improper method of running the waste and vent pipes, which is conducive to stoppage through the accumulation of soap and grease.

Proposed Tube Mills at McKeesport.

For some months officials of the National Tube Company have desired to acquire a large site of land at McKeesport lying between the present National Tube Works and the rolling mills of the Monongahela Steel Works. The parties who owned this land refused to accept a fair price for it, and the officials of the National Tube Company had practically dropped the matter and were making plans to build another tube mill at another point. The business interests of McKeesport then took the matter up and agreed to secure the land at a price fixed by the National Tube Company and the latter agreed to take the property if it was secured at the figures they offered for it. This company have succeeded in getting all the ground at the desired figures, with the exception of two parcels, and the National Tube Company will treat with the owners of these two parcels of property themselves. The ground comprises 28 acres and will be used by the National Tube Company in the building of large tube and other mills and also in extensive additions to their present plant. No definite announcement has been made as to the details of the plant to be built, nor will it be until certain matters now pending have been adjusted.

How to Set Fuel Oil Burners.

An expert in the South, says *Popular Mechanics*, who has made a study of using fuel oil to best advantage sends us the following regarding the location of the burners under an ordinary return tubular boiler:

For a 60-inch boiler place two burners, usually in the center of the ordinary doors and half way from the boiler to the grates. Let the inner ends be flush with the inside of the front wall.

Cover all grate surface with 1/4-inch asbestos board, except the equivalent of about 64 square inches to each burner, and immediately under the same. On top of this place a full layer of fire brick on the flat. Do not lay them too close, but allow a little for expansion. Plaster this over with fire clay. At a point about 36 inches from the point of the burner lay a cascade wall one brick length in thickness. Set these on edge. Leave 1/2-inch spaces. Run this wall up to within as near 4 inches of the boilers as the courses will make. Leave more rather than under 4 inches. Follow the circle of the boiler as nearly as convenient and set the brick up in a little fire clay to steady them. In case the bridge wall is as much as 12 inches from the boiler, lay one course on edge around this. Keep the pit behind the bridge wall empty. Stop all holes in the furnace walls and breeching. Put brick filling in the fire doors, leaving a loose brick near burner for lighting and observing the fire. Leave the ash pit doors in place. Direct the nozzles of the burners slightly downward so that they will strike the cascade wall about one-third of the way from the bottom.

The cascade wall serves very important purposes—first, for storage of heat and then radiating it or giving it out and thus perfecting combustion which might not otherwise be complete, as any unconsumed gases could scarcely get through the small spaces in the highly heated bricks of the cascade wall without being burned.

"How Best to Heat Our Homes"

A favorable impression cannot fail to be made upon people contemplating the erection of luxurious homes by the little pamphlet under the above title, issued by the Gurney Heater Mfg. Company of Boston and New York. It consists of 32 pages printed in black and sepia and bound in a dark drab cover having an embossed design in green and gold and a border consisting of a vine in green having flowers in full bloom in gilt. The first page of the pamphlet presents a sectional view of a building heated by a Gurney hot water heater, and the text opens with the statement that of all the world the American home life is the nearest approach to the ideal, not only because of the civic and social conditions, but also owing to the attainment in the arts and sciences. It treats of the evolution of the heating problem, until its culmination, which is claimed to be effected in the Gurney line of steam and hot water heaters. Fine half-tone engravings are used to picture the beautiful residences of some who have purchased the Gurney heaters, also views of libraries, churches, court houses, hospitals, hotels, apartment houses and a United States Government barracks in which the Gurney boilers are giving satisfaction. The text explains the features and construction of the Gurney apparatus in an entertaining way, and shows the Doric, the 400 Series, the Bright Idea and the Heavy Duty Bright Idea boilers by means of general and broken views. A number of illustrations also display the fine line of Duet, Tremont and Narrow radiators made by the concern. The Gurney Heater Mfg. Company leave no effort unexpended that will aid the heating contractor in effecting a sale of their goods, and the distribution of this last example of the printer's art can but have a beneficial effect in that direction.

Exhibition of Vacuum Heating and Valves.

Invitations have been sent out to steam fitters and heating contractors in the vicinity of New York to visit the salesroom of the Judson A. Goodrich Company, at 107 Beekman street, New York City, where E. P. Allen, representing the Norwall Mfg. Company of Chicago and the James A. Trane Vacuum Heating Company of the same city, is making an exhibition of the specialties of these Chicago concerns. By means of special apparatus Mr. Allen shows, so that all who visit him can readily understand and see, the construction and operation of the Norwall automatic air valve under actual working conditions. Those who are interested in vacuum heating systems can observe, by means of special apparatus, just exactly how the Trane vacuum heating system operates. Mr. Allen, who has been in New York since Tuesday afternoon, has had many interested visitors. He will remain until Monday night with his apparatus in continual operation, for the benefit of those who desire to study its features.

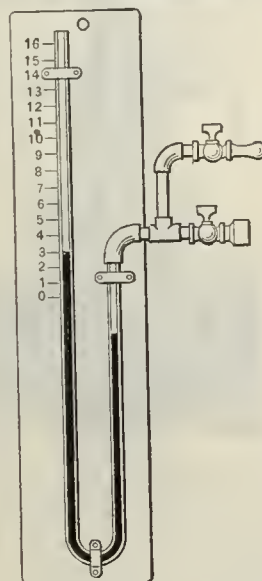
The Drake Series "C" Acetylene Generator.

The International Heater Company, Utica, N. Y., have issued a 20-page catalogue, printed in two colors, and having a green cover, on the front of which is an embossed panel in which the words "Drake Acetylene Gas Generator, Series 'C'" appear in red letters. The first pages treat of acetylene, calcium carbide and the color of the light derived from burning acetylene. Its advantages over other methods of illuminating buildings and villages are presented, among which is the statement that it is as safe as a candle. The advantages of a generator of sufficient size and proper construction to insure cool generation and to prevent the deterioration of gas through heat are also carefully explained. The opinions of several eminent acetylene experts form another interesting feature of the catalogue. In reference to the Series "C" generator, the company claim that it represents the latest and best results of research and experience. It is made in a variety of sizes adapted for the smallest cottages as well as for larger buildings, factories, theaters, or towns and cities. It is pointed out that by the use of separate small charges of carbide there is a saving in both gas and water. The company's method of cleaning the gas furnishes it pure

and dry to the distributing pipes. An illustration of the apparatus is presented, accompanied by a full, detailed explanation of its construction and operation. Other views are also given with the object of making the generator more thoroughly understood, as well as a table giving full dimensions and prices. The catalogue contains views of the International Heater Company's plants at Utica, which is the home of the Drake acetylene generator.

A Gas Pressure Gauge.

Every acetylene piping system should be tested for leaks before the job is passed or left. This is easily done, says the *Plumber and Decorator* of London. The testing or pressure gauge is as shown in our illustration. This can be made by any one. A piece of board, a piece of $\frac{1}{4}$ or $\frac{3}{8}$ inch glass tube and two cocks are the chief materials required. The tube can be bent in a Bunsen gas flame. The divisions, or scale, marked with figures are $\frac{1}{2}$ inch each, but they count as 1 inch each, as the water line sinks as much below zero on one side as it rises above it on the other. The thick black line in the illustration is the water, and it is registering a 3-inch



THE METAL WORKER

A Gas Pressure Gauge.

pressure. This gauge is also used for setting the governor by.

For testing for leaks the lower cock of the gauge is attached to a branch or a bracket. All other branches are plugged or the bracket taps closed. The main service cock, probably in the gas house, is also closed, as it is only the piping and not the generator that is to be tested. Now put water into the gauge until it stands at zero in both legs. Open both gauge cocks, also the bracket tap (if the gauge is attached to a bracket). Blow into the upper cock until a 12 or 14 inch pressure is registered then close this upper cock. If the water line remains steady for 15 minutes the piping work is quite sound.

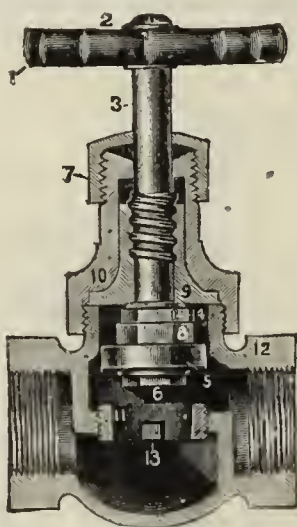
A Labor Exchange.

The Sanitary Specialty Mfg. Company, 55 and 57 North Clinton street, Chicago, who are noted for their enterprise and push, have instituted a new departure of a kind which promises to be very beneficial to the trade. The company have established and are now maintaining an employment department. If work is slack in a community and there are journeymen out of employment they can be helped to secure work by correspondence with the Sanitary Specialty Mfg. Company. On the other hand, if employers have a large amount of work and need the help of journeymen they may be enabled, by writing to the company, to be placed in communication with the right kind of men. The company require of the applicant, in addition to his name and address, information as to his age, those dependent on him, his qualifications and personal habits, as well as references

as to his character. This information is supplied to the prospective employer so that he may be furnished with something on which to form an opinion of the applicant. No charge is made by the concern for their services in this connection. The broad gauge policy of the Sanitary Specialty Mfg. Company displayed in this matter is highly to be commended.

The Huxley Valve.

In the accompanying illustration is shown a sectional view of the Huxley valve, made by the Howe Mfg. Company, 1105 West Main street, Louisville, Ky. This valve, it is claimed, is made of a metal that is well calculated to stand the highest pressures and of a sufficient thickness to enable it to be properly finished without reducing its strength. The bonnet screws on the outside of the throat of the valve, allowing a wrench of any size to be readily used without interfering with the packing nuts. The strength provided enables the valves to be removed from the pipes without straining the necks. It is also claimed that the valve can be readily



The Huxley Valve.

packed under pressure, rendering it especially efficient as a throttle valve. It is only necessary to open the valve wide to shut off the steam or pressure of any sort from the upper part of the valve stem, so that it can be readily packed. All parts are made interchangeable, so that repairs can be quickly made. In consequence, no matter how often the thread in the bonnet which guides the valve stem becomes stripped, repairs can be made without interfering with the use of the valve. Another feature is the ease with which a new valve seat can be put in. These valves are made in all sizes from $\frac{3}{8}$ inch to 3 inches. The house have recently issued a catalogue giving full particulars in reference to them.

Cooling a Laundry.

Only awaiting the arrival of a continued warm spell of weather for a thorough test, the new ventilating and cooling plant in the American Steam Laundry Company's building on South Division street, Grand Rapids, Mich., says the *Press* of that city, is complete and ready for operation. The system is unique in that it is the only plant of its kind in existence, having been devised especially for the needs of the institution by William H. Yeomeans, the engineer of the plant, after long study over the problem of proper ventilation in laundry buildings, and visits of inspection to ventilating plants in Cincinnati, Milwaukee and other cities. Preliminary tests have already been made, which bear out the calculations that the apparatus will reduce the temperature of the plant at least 15 degrees below that of the outer air, overcoming not only the prevailing temperature of the atmosphere, but also the heat given off by the gas burned in the laundry, and now Mr. Yeomans is waiting for the first coming of the heated period to give his device a thorough and conclusive test under conditions of actual torridity.

COOLS AND WASHES THE AIR.

The principle of the apparatus is simplicity in itself. All the air which is to come into the building is drawn by a huge, revolving fan through a screen of coke kept constantly moist and cool by a stream of cold water. This cleans the air of all dust and floating impurities, washes it and delivers it, cooled to a point far below its original temperature, to pipes which carry it to all parts of the plant, where it is discharged at a rate that will renew the air in the factory in about four minutes. In that time the gases given off in the operations of laundering, it is expected, will have no time to gather in appreciable quantities and instead of the operatives being compelled to labor in an atmosphere laden with wash day odors and superheated to a point decidedly uncomfortable, they will be more comfortable than if at work in the outer air.

DRAWING IN THE AIR.

In the center of the group of laundry buildings has been constructed a large air shaft through which all the air to supply the ventilating system is drawn by the big fan. This air shaft opens upon a room across the middle of which is the big filter of coke, inclosed in a framework of wood and wire grating. This filter is 12 feet high, 28 feet long and 18 inches thick, about 7 tons of coke having been required to build it, and extends completely across the room, making it necessary for every particle of air to pass through it. On the other side of the coke filter is the casing for the big fan, the casing being 17 feet in diameter. The fan inside is 120 inches in diameter, the blades being 60 inches wide. Whirling at the rate of 117 revolutions a minute the big, flat blades strike the air as it rushes in at the side of the fan from the filter and force it out more than 50,000 cubic feet per minute into the immense galvanized iron pipe 74 inches square, which opens into the system of ventilation pipes. The fan is driven by a special 32 horse-power engine.

WATER FROM DEEP WELL.

To insure the proper cooling of the air the company some time ago drove a 5-inch well 315 feet into the ground, where a stream of water ample in quantity and of 47 degrees temperature, only 15 degrees above the freezing point, was encountered. Several veins of water were encountered at lesser depths, but the company wanted water as cold as possible, and kept on until this stream which met all their expectations was struck. This water has a slightly mineral taste and is used for drinking purposes throughout the plant. It has been tested with soap for use in laundry operations and has been found to be no harder than the city water. It rises by gravity to a point 23 feet below the surface, a special pump bringing it to the ground level and sending $1\frac{1}{2}$ -inch stream to the top of the coke filter, where it is fed into a shallow trough through a perforated pipe at the rate of 125 gallons per minute. From this trough it overflows upon the intake side of the filter, dripping down and keeping the coke thoroughly moistened. The water drains out at the bottom of the coke screen, and it is the intention to conduct it to a sand filter, by which it will be cleaned for further use in the laundry.

RESULTS WHICH ARE EXPECTED.

The water being delivered on the coke at the temperature of 47 degrees, it is expected that the coke will be kept at so low a temperature that the air will be cooled to a point that will overcome the heat given off by the gas heated machines used in the laundry work and also overcome about 15 degrees of the outer temperature—that is, if the temperature outside should rise to 100 degrees, inside the operatives would be working in a temperature of 85 degrees; while in ordinary summer weather the rooms would be as cool as comfort would allow. From the ventilating pipe system there are six 22-inch openings on each floor, feeding in the cooled air at all points of the rooms, the foul air displaced passing out of the ventilators and the windows, which will be open in warm weather. It might be supposed that the air, passing through the moistened coke, would take up a great deal of moisture, but tests with the hydrometer have shown that the difference in moisture is hardly perceptible.

PNEUMATIC WATER CLOSETS.

BY HELMAR.

Pneumatic closets are a type of the siphon family of closets that depend for their siphonic action upon the sucking power of a partial vacuum below the bowl seal. Various kinds of construction will cause the necessary vacuum, and with some makes any kind of tank will answer. But the strictly pneumatic closet, the one most widely used, and of which the engraving herewith illustrates the principles, requires a tank particularly adapted to the purpose.

This kind of closet necessitates the use of two traps. The closet proper is made in earthenware with both single and double trap. The closet with one trap in earthenware, shown in the sketch, is perhaps more used than the other, but no other type of closet can be substituted for it without changing the under floor piping work, while any other closet can be substituted at any time without altering the roughing in if the two traps are in the earthenware.

The upper trap of these closets must not be vented, and no vent is provided by the makers. If the upper trap was vented no vacuum could be formed in the space between the two traps. The vacuum is essential; the closet will not work without it. It cannot be flushed by hand by pouring water into the bowl with a bucket. The bowl would fill and run over, because the air locked between the two traps will not allow the water to flow into the soil pipe. The air between the traps must be withdrawn before the bowl will discharge water properly, and the only way to do this is through the normal action of a tank made for the closet. For this particular reason pneumatic closets are not the best suited for use in country or suburban places where a plumber cannot be found quickly.

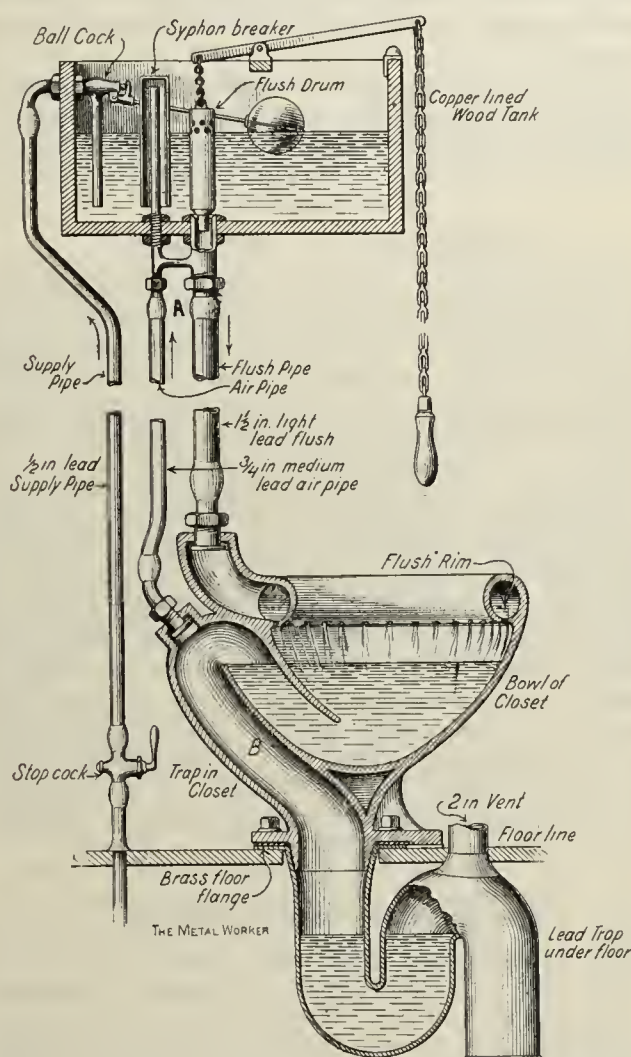
The lower trap of pneumatic closets must always be vented. Closets having two traps in the earthenware are fitted with a vent on the lower trap. When the closet with one vent is used, the plumber must supply one trap under the floor and vent it as shown in the sketch. If the vent on the lower trap is omitted the closet will not work after the first flush, because the volume of water in two traps, together with a discharge from the tank, is sufficient to form an ordinary siphon in the drop leg of the lower trap, which would pull all the water out of the lower trap. Then there would be no seal in the lower trap for the next flush, and the tank could not rarify the air in the entire soil pipe system. Consequently there would be no siphonage. The vent to the lower trap is to break the siphonage, which would otherwise be complete, and throw enough water back into the trap to seal it. The tank is arranged to break the siphonage of the upper trap in time to still furnish enough water to properly seal the upper trap.

When one trap is under the floor the floor joint must be trustworthy. If air is permitted to leak into the space between the traps while the tank is operating it is apt to so nearly maintain a plenum that no siphonage can take place. Care must be taken to see that the under floor work is safe when setting a closet of this kind in an old job. A waste pipe carried into the trap under the floor above the seal will prevent siphonage. For the same reason no waste should be connected to the lower trap of a pneumatic closet in new work. It was once the custom to branch bath and lavatory waste pipes into closet traps, always above the water level, however, if the other fixtures had traps also, in order to keep them from becoming air bound. A case of this kind may be overcome without disturbing the pipes when putting a pneumatic into an old job, by using a 3-inch ferrule, spread at the upper end and flanged over the flange of the old trap. The space between the ferrule and the trap is sufficient for the waste branched into the trap. The ferrule must end well down into the water, and the plumber must make certain that the crown of the trap is vented.

The accompanying illustration does not conform to any principles of the strictly pneumatic closet perfectly. A side section of the earthenware is made to show the pipe connections more distinctly. The trap under the floor is a 4-inch lead "S" with 2-inch crown vent. The

earthenware contains one trap. The floor joint is made by flanging the lead trap into and soldering it to a brass floor flange. The floor flange is screwed to the floor, and the earthenware is fastened to it by bolts which are slipped into slots in the flange, pass up through the earthenware flange and hold it by blind nuts screwed on the upper end. Ordinary glazier's putty is used between the two flanges. When a closet with two traps in the earthenware is used it is not necessary to take so much care with the floor joint.

Pneumatic closets of this type always have three pipes—the supply to the ball cock in the tank, the air pipe connecting the air space between the traps with the siphon breaker, and flush pipe or service box of the tank, the flush pipe, which carries the water from the tank to the closet. The tank shown is known as a single-charge tank. These closets are also furnished with a double charge tank which offsets the disadvantage of intermittent supplies to some extent. The double charge-



Pneumatic Water Closets.

tank has a false bottom which makes a service box of the lower part to which the water is admitted through a valve of large area, operated by the regular pull. The water falls into the service box much faster than the flush can carry it out; hence the pull need not be held much longer than it takes to start a siphon.

These tanks provide bowl ventilation by connecting the siphon breaker well with a hot flue and are otherwise ideal in action, but the forming of the service box necessitates exposing solder to the action of the water, which in many localities causes it to leak in a short time. When the seams leak they are very difficult to solder, and are generally dreaded by plumbers and not recommended by those who have had experience with them. The single charge tank has no objectionable feature of this kind. Lifting the flush valve permits the water to fall into the flush pipe. The valve seat casting has a cavity from which is an air passage, A, to the air pipe connection. The water falling into the flush pipe sucks aid through the passage A. The siphon breaker cap being closed at the top and sealed by water in the tank at the bottom, the air in the space between the traps is sucked out, up through the air pipe, through the-

passage A and down the flush pipe with the water. As soon as the air in the space B is sufficiently rarified the atmospheric pressure in the room presses the water out of the bowl. The water in the lower trap having risen somewhat, because of the reduced pressure, the seal of both traps fall with enough momentum to cleanse the lower trap and produce a siphon in its drop leg which is broken by the crown vent in time to save a seal for the lower trap. Siphonage continues from the bowl until the water level in the tank gets below the end of the siphon breaker. Air then begins to come to the passage A from the tank. The balance of the water in the tank acts as an after fill until the flush is broken. Air from the tank fills the void space in B. Water refills the tank and seals the lower end of the siphon breaker. Then the closet is ready for another flush. A $\frac{5}{8}$ -inch pipe will sometimes do well for the air pipe, but $\frac{3}{4}$ -inch is recommended. Soil and bits of paper are often drawn up into the air pipe, and sometimes clog it so the closet will not work. A piece of paper sometimes gets over the air pipe connection in the closet traps and causes it to fail to siphon.

Exhausting the air from between the traps down the flush pipe has been objected to by some, but as the air is drawn from above, a trap which has been cleansed by siphonage, the objection has little weight.

Death of C. J. McCubbin.

The supply trade will learn with regret of the death of C. J. McCubbin, at his home in Washington, D. C., on July 16, in the forty-fifth year of his age. Mr. McCubbin was seated at the breakfast table and had expressed himself as feeling as well as he ever did in his life, when he was suddenly seized with illness. He was quickly assisted to a couch, but died in a few minutes. His death was due to troubles of an apoplectic nature. Mr. McCubbin was identified for many years with the James Robertson Mfg. Company of Baltimore, Md., and left this house to assume the position of manager of the Washington branch of the Henry McShane Mfg. Company. He continued in this position until August, 1896, when, as head of the C. J. McCubbin Company, he bought out the interest of the Henry McShane Mfg. Company in Washington. He held the position of president of the company at the time of his death. Mr. McCubbin was widely known through his business relations and connections in the trade, and all who knew him will severely feel his loss.

The Colwell Lead Company.

The wayfarer on Centre street, New York City, will not fail to be impressed with the changed appearance of the exterior of No. 63, the home for many years of the Colwell Lead Company. It has assumed a brilliant cerulean hue within the past few days, in sharp contrast with its dull colored surroundings. Dark red trimmings lighten the effect of the blue front, and a large new blue sign, bearing in white letters the name of the concern, has been placed on the top of the building. The tall shot tower at the rear, which has stood for many long years as a landmark in the district, has also been treated to a coat of blue paint. The whole effect is decidedly striking.

The handsome showrooms of the Colwell Lead Company, which occupy the ground floor of the building at the corner of Centre and Pearl streets, are among the most attractive of their kind in the city. The display of high grade sanitary ware, including bathtubs, wash basins, closets, showers, laundry tubs, sinks and bath and toilet room furnishings of all kinds, is arranged with great taste amid harmonious surroundings. Large plate glass windows permit a fine view of the goods to be had from the exterior of the store. The business offices of the company have been removed from their former location, at 63 Centre street, to more commodious quarters at Centre and Pearl streets, where they occupy the entire floor above the showrooms.

CITIZENS of Millersburg, Ohio, are negotiating for the erection in that city of a hot water heating and electric lighting plant.

BROOKLYN MASTER PLUMBERS' OUTING.

One of the most enjoyable events in the plumbing trade is the annual outing of the Brooklyn Branch of the Association of Master Plumbers of New York. Donnelly's Grove at College Point on the Sound has been proved in the past to afford the greatest attractions, and this year again the Brooklyn plumbers, with their wives, sweethearts and children and a contingent of supply men, embarked on Wednesday morning at the Bridge Dock to the music of Lent's band. The weather was exceptionally fine, and after a pleasant trip up the Sound all were ready for the fish breakfast served by Mine Host Donnelly.

The programme of sports arranged by the Athletic Committee, E. S. Kelly and William Brown, was then begun. The plumbers' ball team were behind until the end of the third inning, when, their score being 9 to 6 for the supply men's team, they stopped the game, because, as they said, their opponents had no use for the prize of Stillson wrenches presented by the Ronalds & Johnson Company for each man on the winning team. The bowling match between a New York and a Brooklyn team was won by the Brooklynites to the tune of 568 to 518, amid much merriment and plenty of encouragement and advice. The tug of war was made by 341 plumbers, with the assistance of Bart Donohoe, against seven supply men, and the nickel plated traps given by the F. N. Du Bois Company are to be broken up as souvenirs of the event.

Boxes of "Huyler's" at the end of the course was the incentive for the ladies to race. The sack race for a 10-inch Stillson wrench, given by Thomas G. Knight, and a year's subscription given by *The Metal Worker*, caused much merriment. A lively hustle was produced in the walking match by hanging up an 18-inch Trimo wrench, presented by Spencer & Haviland, and a year's subscription by the *Plumbers' Trade Journal*. A fine sprint was made in the 100-yard dash to get the nickel plated trap presented by the F. N. Du Bois Company and the plumbers' tool bag given by Thomas Delaney, and the three-legged race became a scorch to get the gasoline torch given by the George P. Jacobs Company.

A potato race for a box of solder from the National Lead Company, a swimming match for model laundry tubs given by the Minns Sink & Specialty Company, a fat man's race for a bathtub, a boys' race for a 6-inch Stillson wrench, given by the McElreavy & Hauck Company, and shot putting and hammer throwing contests completed the athletic programme. The dancing pavilion was a scene of gay activity, and when the march for dinner was called a goodly assembly reached the dining-room voting the Committee of Arrangements to be jolly good fellows. They were E. Macdonald, William M. Brown, Wm. Eiermann, S. J. Corcoran, Lewis Deiser and George W. Smyth. Among the Brooklyn members who assisted in dispensing hospitality were war veteran Thomas Kelly, ex-President M. F. Gleason, C. Bosch and J. Sheppard.

Among the guests were I. J. Brown, A. H. Brown, T. A. Hill, Philip Brady, John Renahan, B. Donohoe, and Executive Clerk Lockwood, of the Manhattan Branch; Frank K. Chew of *The Metal Worker*, A. A. Ainsworth of the *Plumbers' Trade Journal* and J. Bailey of *Domestic Engineering*. The representatives of the supply trade come from the Ivory Mfg. Company, Thatcher Furnace Company, Syracuse Stove Works, Ronalds & Johnson Company, Thomas G. Knight, Jenkins Bros., Cornell & Underhill, National Lead Company, Minn's Sink & Specialty Company, Spencer & Haviland, McElreavy & Hauck Company, Alberene Stone Company, George P. Jacobs Company, McCall & Sheer, Central Foundry Company, American Radiator Company, J. L. Mott Iron Works, Crane Company, H. P. Reed Lead Works. Estate of A. Froelich, John M. Wolff Company, McConnell Slate Company, Rossmore Company, W. C. Vosburg Mfg. Company, Thompson Meter Company, E. P. Gleason Mfg. Company, Colwell Lead Company, Hart-Ayres Plumbing Company, Robinson Stoneware Company, Richardson & Boynton Company, E. S. Wheeler Company, Coyne & Delaney, Weehawken Granite Company.

Thomas M. Delaney, German Groeb & Son, McMann & Taylor, Chas. Graham, Chemical Pottery Works, John Clark, F. A. Hannweber, James Luckett, Lynch & Cullen, W. H. Ramsdell, W. T. Baker, Incorporated, James Devlin, John Cooper, Patrick McNamee, Malbin & Kammerman, Herman Wood Mfg. Company, Sternau & Co., F. N. Du Bois Company, Behrer & Co., and the United States Radiator Company.

After dinner the party started for the boat, and the home journey was enlivened by the presentation of the prizes. At parting the day was voted to have been one of the most pleasant that the members of the association have ever enjoyed together.

Three-Column Penn Radiator.

The Penn Radiator Company, Corry, Pa., have made substantial improvements in the line of radiators which they offer to the heating trade. In the accompanying illustration we show the three-column Penn radiator, which is made for both steam and hot water heating.



The Three-Column Penn Radiator.

This radiator has sections $9\frac{1}{4}$ inches wide, with legs $9\frac{1}{2}$ inches in width. The sections are $2\frac{1}{2}$ inches in thickness and are made to have 5 square feet of surface per loop of 38 inches high. The radiator is made in heights of 20, 26, 32, 38 and 45 inches. All the openings are tapped with right hand thread, having an opening $4\frac{1}{2}$ inches from the floor to the center. The company state they have been careful in preparing their line of radiators for the market so as to remove all obstructions that would impede circulation, and have so constructed them that the joints would be absolutely tight. The style can be seen from the illustration, and the finish by an examination of their goods, which are found in the sample rooms of the jobbers in many of the large cities.

New York City Notes.

The vacation school work has been given out at last. Among the lucky bidders are Frank J. Fee, James Fay, Mills Brothers, O'Brien & Ryder, M. M. Golding, William Horn, John Wood, John Spence and D. J. Deady.

* * *

The inspectors of the Tenement House Department are beginning to be noticed on the streets as part of the uniformed forces of the city. They are especially noticeable on account of the leather bag which they carry and which contains their blanks, rules and measures, &c. The round, rising sun badge they wear is also noticeable. Should they keep on as they are going they will make lots of overhauling work soon.

The Building Department is taking active measures against unlicensed plumbers who are carrying on business and exposing signs to that effect. A long list of such offenders has just been made up by the Law Committee of the Master Plumbers' Association and handed to the department for prosecution.

* * *

Although trade, as a whole, is slack, some of the new work plumbers keep busy, among whom are Jacob Manneschmitt of Brooklyn, with a job at 164-166 Park row; Beck Bros. of 598 Ninth avenue, with four tenements at 317 to 325 West Forty-second street, and Sam Friedman, with a factory building on Eightieth street east of Avenue A. J. H. Hindley has a job which will almost count as a new one on Fifty-second street near Madison avenue. F. S. Schumann has a large factory building on 116th street near Pleasant avenue. Gus Staats is busy in overhauling a hotel at Fifty-ninth street and Lexington avenue, and is doing a new apartment house on Fifty-ninth street between Lexington and Third avenues. Michael J. O'Keefe will soon be busy with work in an apartment hotel that is being put up at Madison avenue and Sixtieth street for the Fifth avenue Realty Company. Jas. Armstrong has a 12-story office building at 113-115 Cedar street, and W. H. Quick has a piano salesroom and office building at 210 Fifth avenue.

* * *

The plumbers doing city work will have to adjust their wage schedule to comply with the prevailing rate of \$7 a day for man and helper, as adopted by the association not long ago.

NEW JERSEY STATE ASSOCIATION OF MASTER PLUMBERS.

Master plumbers of New Jersey from Atlantic City, Asbury Park, Newark, Passaic, Hoboken, Jersey City, Bayonne, and other cities, met in Newark, N. J., on July 15 for the purpose of organizing a State Association of Master Plumbers. After preliminary discussion an organization was effected and the following officers elected:

President, Ira Budd, Newark.

Vice-President, Frank Walsh, Atlantic City.

Secretary, E. A. Bleything, Newark.

Financial Secretary, J. Lang, Jersey City.

Treasurer, W. H. Aldous, Passaic.

Sergeant-at-Arms, Robert Zeitler, Newark.

The President appointed the following Committee on Constitution and By-Laws: W. Zimmerman, A. S. Walker and W. H. Aldous. The meeting adjourned subject to the call of the president.

Newark, N. J., Master Plumbers' Outing.

After having one experience up the Sound, the Master Plumbers of Newark, N. J., returned to their tried and satisfactory recreation ground at Port au Peck, N. J., for their annual outing on Wednesday of this week. Mine Host Wardwell is said to have outdone himself in the shore dinner this year and the epicures of the trade are not yet done singing praises over the clams and what followed. There were 160 plumbers and supply men to pass judgment, including the whole North Hudson County Association. They also had as guests President Gregor Drummond and Secretary Howard A. Smith of the Pennsylvania State Association, and Louis J. Somers, National State Vice-President for Pennsylvania. President Drummond had his first experience with clams, and has already accepted an invitation for next year. F. B. Raymond of the Thatcher Furnace Company was the dean of the supply men and vouches for the perfection of the feast. A baseball match and other sports entertained the plumbers, who also embraced the opportunity to do good association work. Voss' Band enlivened the occasion and the Committee of Arrangements can be reappointed if they desire that honor, for everybody congratulated them on the excellence of their provisions. The committee was composed of the following: A. S. Walker, chairman; William Jacobi, F. J. Sturn, E. A. Bleything, E. M. Sterling and President Ira Budd.

Connections with Vitrified Pipe Sewers.

The tendency in the plumbing trade for some time has been to substitute extra heavy cast iron pipe for earthen sewer pipe, no matter what grade. For this reason interest will be taken in the subjoined article from *Municipal Engineering*. The statement having been made that it is absolutely not permissible to cut a hole into a vitrified sewer pipe and insert a house connection, some claimed that it had been frequently permitted, the incision being cut on a bevel and the inlet cut to fit, the whole then being neatly and smoothly cemented both inside and out. In addition the questions were asked whether the authorities were unanimous in their agreement in reference to the first statement, and whether the exchange of straight pipe for a Y was as apt to cause trouble as a neatly inserted beveled pipe. The reply made to the questions is as follows:

The authorities seem to be unanimously of the opinion as given above. It is perhaps possible to make the connection in the manner suggested, but it is not probable that it will be well made. The beveled pipe can be made, for as many pipes may be spoiled as may be necessary to get one of the proper form to fit the outside of the sewer pipe. It is, however, a much more difficult matter to cut the hole in the sewer pipe so that it will be exactly right, and the pipe is very likely to be cracked in the process or its joints started. The chips are quite likely to fall into the sewer, where they may give trouble later. It is quite impossible to know how much of an obstruction is made by cement and other materials in the sewer in making the joint until trouble develops later from stoppage. If the joint is properly made it will be necessary to tamp the earth under the beveled pipe after it is laid, and unless this process is delayed until the cement has fully set, the joint is certain to be injured and left in a leaky condition. Even if permitted to harden before the tamping and filling are done, the joint may be broken by subsequent pressure from above and settlement, unless a large amount of mortar is used in which to imbed the two pipes forming the joint.

If the hole in the sewer pipe is properly cut without injuring the pipe, which is unlikely, the rest of the work of setting the pipe outside can be done by skillful men with plenty of materials, but close inspection is absolutely necessary, otherwise any injury to pipe or joint will be covered up and the joint will be imperfect. It is certainly not permissible to cut the hole large enough to insert the beveled pipe in it. There is too much danger of the pipe being forced into the sewer in setting, or later by settlement of the trench, as well as of breaking the sewer pipe by the connecting pipe acting as a lever when settlement occurs.

If, as is probable, the sewer pipe is injured in cutting the hole, it must be removed and the Y inserted. There are so few cases in which the hole can be cut properly and safely, and the amount of material and time used for proper construction is so great, that it is no hardship to require the insertion of the Y without waiting to try to cut the hole.

The necessary part of the bell can be cut from the new pipe and from the sewer pipe, and much of the length to be removed can be taken out before the sewage is shut off. A dam can be put in at the nearest manhole and another in the pipe just above the opening, if necessary, so that possibly no house connections need be shut off. Prompt work in taking out the pipe, laying the mortar bed for the new pipe and packing and cementing the joint will reduce the time consumed to a minimum.

THE LOS ANGELES HEATING COMPANY of Los Angeles, Cal., have recently been awarded some important heating contracts in that city and vicinity. They are now installing an elaborate heating plant in the palatial residence recently completed for Shippa Pietra on his estate near Los Angeles. One of the largest Superior Steel Furnaces, manufactured by the Utica Heater Company of Utica, N. Y., will be used. The Los Angeles Heating Company are general distributing agents in Southern California for the company named. Solid Bronze Registers and the most expensive fittings will be used throughout, and when completed, it will, it is said, be one of the finest warm air heating systems on the Southern Pacific Coast.

J. B. WEIANT, New Britain, Conn., is plumbing six houses for C. A. Parker and a house for Edward Parker. He also has the plumbing of a new house which Carlson & Torell are building in New Britain.

Heating and Plumbing Notes.

A. E. VESPER of Pasadena, Cal., has a plumbing contract amounting to \$75,000 for a new hotel at Santa Barbara.

LIBBY & BLINN, Hartford, Conn., have the contract for installing a 10-section No. 3 Mercer Hot Water Boiler in a block on Main street for Henry Kohn & Sons and a 12-section No. 2 Mercer Boiler for Francis Parsons on Main street, and the heating of an additional ward in the Hartford Hospital. Among other contracts is one for work in the gymnasium at Trinity College, and two 80 horse-power wrought iron Tubular Boilers for the West Middle School, to take the place of five other Boilers.

THE ACETYLENE GAS COMPANY OF AUSTRALIA, LIMITED, are reported to be doing a large and growing business in the Antipodes. A rapidly increasing demand is noted for the Reservoirs, Pipes, Burners and other metallic appliances connected with the production of acetylene gas.

CHRIS. WATZ of Denison, Texas, has celebrated the eighteenth anniversary of his business establishment in that city. In addition to carrying a large stock of Bath-tubs, Water Closets and Plumbers' Goods at his store, at 303 West Woodward street, he also carries Iron Pipe, Steam Fittings, Water Filters and Tools. He has a well equipped shop for steam and hot water heating work and also a sheet metal working shop, where, in addition to doing roofing and guttering, he manufactures Skylights, Cornices and Galvanized Iron Cisterns, and has made a specialty of putting up Metal Ceilings. A notable piece of his work in Metal Ceiling, Tin work and Cornices is shown on the new Methodist Church in Denison.

WILLIAMS BROTHERS, Detroit, Mich., are the architects for the addition to the Amherstburg Public School, which will include a heating, ventilating and plumbing system. The improvements are to cost \$10,000.

THE Mississippi State House Commission at Jackson, Miss., will award contracts aggregating over \$100,000 at the meeting in September, when bids will be opened for the electric lighting, steam heating plant, gas fixtures and similar work.

HUFFMAN & CONKLIN, Columbus, Ohio, bid \$14,000 and secured the contract for steam heating the building to be erected under the management of the trustees of the Institution for the Blind in that city. They were also awarded the plumbing contract for the same building at their bid of \$2850.

DAVID CRAIG of Boston, the new member of the Executive Committee of the National Association of Master Plumbers, is reported to have made a very able address at the annual outing of the New Hampshire State Association of Master Plumbers, at Hampton Beach, last week.

THE Kansas City branch of the Crane Company of Chicago report that their sales this year show a substantial increase over the sales of preceding years since the house has been established in that city.

At a joint meeting of the Health and Ordinance Committees of the City Council of New Britain, Conn., a request to make an amendment to the plumbing ordinance, so as to allow the use of couplings in making connections as well as wiped joints, was referred to a special committee on plumbing, composed of Timothy E. Burns and Charles E. Morey.

THE capital stock of the Reason Automatic Air Pump Company, Pontiac, Mich., has been increased from \$12,000 to \$25,000.

H. HALL MARSHALL, consulting engineer, of Philadelphia, is preparing plans for the heating, lighting and power plant of a five-story kitchen and laundry addition, 56 x 105 feet, to a hotel building in Reading, Pa.

C. H. BROWN, Mystic, Conn., is making extensive repairs and improvements in the plumbing and toilet rooms of the A. O. U. W. Lodge rooms in that city.

THE trustees of the New Hampshire School for Feeble Minded Children will receive, until August 1, at the office of William J. Ahern, Secretary of the State Board

of Charities and Correction, Concord, N. H., bids for plumbing, heating and ventilating the new dormitory building to be erected at Laconia, N. H.

J. B. ELKIN, engineer for the Secretary of State, Columbia, S. C., informs us that the State is about to receive bids for a new steam heating apparatus for the State House.

BALLAMY & HORNUNG, Omaha, Neb., have secured a contract amounting to \$19,950 for plumbing and heating the new addition to the Federal Building in that city.

FRANCIS J. TORRANCE, vice-president of the Standard Sanitary Mfg. Company, at Pittsburgh, Pa., has been elected a director in the Second National Bank in that city.

THE WHEELING STEEL & IRON COMPANY, Wheeling, W. Va., are installing three new gas producers for supplying the heating furnaces at the Tube mill at Benwood. Work on the new Tube mill of this concern is not progressing as fast as desired, owing to delay in securing material.

THE AMERICAN TANK & FIXTURE COMPANY, Chicago, have changed their name to the Acorn Brass Mfg. Company and increased their capital from \$50,000 to \$200,000.

THE QUEEN CITY BRASS & IRON WORKS COMPANY, Cincinnati, Ohio, report quite an extensive and growing demand for their Valves, their present business being the largest in the history of the concern. From the amount of orders they are receiving from engine builders all over the land it would appear that that branch of trade is more than usually brilliant. Their trade in Steam Fitters' and Plumbers' Supplies is also good for this time and the outlook is considered first class.

THE directors of the Boeseke-Dawe Company, successors to Edwards & Co., dealers in General Hardware, Plumbing Goods, &c., Santa Barbara, Cal., have elected M. C. Faulding to succeed T. R. Dawe in the management of the establishment. Mr. Faulding has been identified with the business for the past 16 years and is thoroughly familiar with all its details.

M. J. HALLAHAN of the plumbing firm of Hallahan & Costello, Augusta, Ga., has been in New York City with J. Lindsay for the purpose of studying the plumbing in the best hotels in New York City and the North, for the purpose of determining on the best modern system of plumbing for the new Augusta Hotel, at Hampton Terrace, Ga.

MICHAEL F. DOLAN, who carried on a plumbing business at Oneonta, N. Y., died at his residence on July 9 from Bright's disease, aged 47 years. He is survived by his wife, two sons and a daughter.

THE BURLEY HEATER COMPANY, Tyrone, Pa., are issuing a 16-page catalogue printed in two colors and bound in a dark brown cover, on which there is an embossed design and the words "Burley Heaters" in silver gilt. The Burley Heater is adapted for steam or hot water heating, and is of the vertical, sectional type, made with grates 14, 20 and 36 inches wide, and rated to carry from 275 to 3500 square feet of direct steam radiation.

ROBERTS & GARDNER bid \$524 and secured the contract for placing a new steam heating boiler in a school house at Wellsboro, Pa.

Bids will be received until August 6 for installing a new system of plumbing in the Government Building at Erie, Pa.

C. F. WILLS, the new plumbing inspector of Pueblo, Col., is making an exhaustive examination of the plumbing system of the public buildings in that city and improvements are to be made in them.

L. LUDERBACH, J. M. Keeley, John Finan, J. A. Aitkin, F. H. Penula and J. D. Burghardt are a committee from the Master Plumbers Association of New Orleans, La., appointed to draft plumbing rules and regulations for that city in accordance with the new sanitary plumbing law recently passed by the State Legislature.

THE C. F. CHURCH MFG. COMPANY, Holyoke, Mass., are issuing an eight-page catalogue devoted to their Flexine Sanitoure White Enameled Bath and Specialties. This Enamel is said to be of high finish and dur-

able, so that it will neither crack nor flake, but hold its polish indefinitely, while being a nonconductor, it is agreeable in either hot or cold weather. Another feature is that it is impervious to moisture and will not stain. This finish can be applied to wood or metal surfaces in any color. The catalogue contains half-tone engravings, showing Swell Front Low Down Flushing Tanks, Overhead Flushing Tanks, Bath Seats, Water Closet Seats and Covers, Medicine Cabinets, Mirror Frames and Bathroom Stools. The character of the goods and their finish will make the catalogue of interest to the plumbing trade.

GEORGE W. ROW, Omaha, Neb., has secured the contract for plumbing and heating the new First Baptist Church at Utica, Neb.

THE July edition of the "Directory of Recognized Master Plumbers" in localities where there are members of the National Association of Master Plumbers, which has just been issued from the headquarters of President Hornbrook, at Kansas City, Mo., shows the association to be in a flourishing condition, with additional members since the sixth edition was distributed.

THE metal polishers, buffers, platers, brass molders and brass finishers of Cleveland, Ohio, have won their fight for a nine-hour working day. Eighteen manufacturing concerns, among which are some of the largest Plumbing Goods houses in the country, have conceded the demand of their men in this respect.

New Firms and Changes.

THE WESTERN MANTLE COMPANY have been incorporated at Portland, Ore., with a capital of \$5000, to manufacture and sell Gas and Gasoline Mantles. The incorporators are F. H. Reynal, P. H. Lacy and Louis Reno.

S. H. SAYRE AND C. R. SAYRE have organized the firm of Sayre Brothers, at Hampton, Va., and will engage in general foundry, steam and hot water and warm air heating work. They will also manufacture Steam and Hot Water Boilers, Furnaces, and Structural Cast Iron Work.

THE LYNCHBURG SUPPLY & FOUNDRY COMPANY of Lynchburg, Va., succeed the Lynchburg Supply Company, and propose to construct a foundry for the purpose of manufacturing Pipe.

THE NATURAL VENTILATING COMPANY of New York City have been incorporated with a capital of \$250,000. The following are the directors: Charles E. Pennwyer, Julius M. Ferguson and John Willett.

THE GLEASON, BAILEY & SCIPLE MFG. COMPANY of Seneca Falls, N. Y., have been incorporated with a capital of \$200,000 to manufacture Pumps and Hydraulic Appliances, with the following directors: R. J. Purcell, Atlantic City, N. J., and Frank C. Beebee and T. R. Sciple, Seneca Falls, N. Y.

Commercially Pure Aluminum.

The color of commercially pure aluminum depends, says the *Aluminum World*, upon the temperature at which the metal has been treated. Cast in chill molds and cooled quickly, or cast in green sand at a low temperature, the metal has a bright white color, nearly like that of silver. When cast too hot in dry sand, the color is gray, like lead, or bluish, like zinc. The fracture grain differs considerably according to the method of casting, cooling or working. When drawn, rolled, or forged, the metal shows a silky grain. The specific gravity of commercially pure aluminum varies at atmospheric temperature from 2.56, when cast in sand, to 2.71, when hammered or drawn.

Under the title "Top or Bottom—Which?" Archer Brown of Rogers, Brown & Co., New York, has issued for private circulation a neatly printed pamphlet addressed to boys. It is a "study of the factors which most contribute to the success of young men," and is dedicated to his sons, Archer and Lowell. There are interesting introductions contributed by Bishop Charles H. Fowler, Hamilton W. Mabie, Irving Bacheller, Andrew Carnegie and James B. Angell, president of Michigan University.

Stove and Hardware Dealers.

ALLEN BROWN & Co. have lately commenced the Shelf Hardware and Tinware business in Stafford Springs, Conn.

W. W. CORKINS has purchased the retail Hardware, Stove, Tinware, Farm Implement and Sporting Goods business at Fulton, S. D., formerly conducted by Holmes & Howe.

W. T. PETERS, Algonquin, Ill., has disposed of his Hardware, Stove and Tinware business to S. D. Baxter, who continues at the old stand.

THE Hardware and Stove firm of T. J. Carman & Co., Mayfield, Ky., have dissolved. T. J. Carman is successor.

LYNWILER & SON, dealers in Hardware, Stoves, Tinware, Agricultural Implements, Sporting Goods, &c., are closing out their business in Greencastle, Mo.

PHILLIPS & CALLIN, dealers in Hardware, Stoves and Agricultural Implements, Bloomfield, Iowa, have been succeeded by Hardy & Son.

SKALAK & ATWOOD have succeeded Skalak & Son in the Hardware, Stove, Agricultural Implement and Windmill business in Humboldt, Neb.

F. J. EVANS & Co., dealers in Hardware, Stoves and Tinware, Corsicana, Texas, have been succeeded by J. E. Deckard, who will continue at the old stand. Mr. Evans will embark in the furniture business in the fall, handling also Stoves, Tinware and Household Goods.

RENICK HARDWARE COMPANY have lately opened up in the Hardware, Tinware, Paint and Oil and furniture business at Falling Spring, W. Va.

ABRAM H. TOWER, in the Hardware, Stove, Agricultural Implement and plumbing business in Stoughton, Mass., has been succeeded by W. P. Hutchinson.

SLABA & WAGNER, Hardware, Stove and Harness merchants, Buffalo Center, Iowa, have been succeeded by H. A. Wagner.

NORWOOD & STRINGFELLOW have succeeded B. F. Cooper in the Hardware, Stove, Agricultural Implement and Sporting Goods business in Oakdale, Neb.

J. C. DE LAPORTE has succeeded De Laporte & Lofton in the Hardware, Stove and Farm Implement business in Ladonia, Mo. Mr. De Laporte has adopted the cash system of doing business. He is also remodeling his store.

THE Executive Committee of the Chicago Retail Hardware Dealers' Association have decided to postpone the eighth annual picnic until Wednesday, July 30, two weeks from the original date, as the additional time will allow for more thorough preparation. An effort is being made to have a number of manufacturers and dealers from both the East and the West attend the outing, and success seems likely to attend the efforts of the committee. A circular letter is being mailed to all Hardware dealers throughout Chicago territory, notifying them that the tickets previously issued for transportation and the prizes will be honored on July 30 as though the picnic had not been postponed.

O. R. RICH & SON have succeeded L. A. Young & Co. in the retail Hardware, Stove, Agricultural Implement and Sporting Goods business in Judsonia, Ark.

HORTON & ELLIOTT, Ulster, Pa., have purchased the Hardware, Stove and Sporting Goods stock of H. D. Bolt. They are occupying a new building 24 x 48 feet in dimensions.

SMALLEY & CASE have succeeded D. H. Smalley in the Hardware, Stove and Sporting Goods business in Moran, O. T.

DEYOE BROS., who several months since purchased the business of Phinney Stove & Hardware Company, 1530 Market street, San Francisco, Cal., have altered and materially improved the establishment, and have also increased the stock formerly carried. Besides carrying Hardware and Stoves the firm also conduct a tin and plumbing shop.

THE wholesale and retail Hardware, Stove and Farm Implement business at Cynthiana, Ky., formerly conducted under the style of G. H. Watts & Co., is now being carried on under the name of Fred. G. Jenkins.

Mr. Jenkins is building a 40 x 20 feet addition to the rear of the establishment, and putting in new floor cases and other modern fixtures.

W. S. TUFTS has succeeded John Christenson in the Hardware, Stove, Agricultural Implement, Sporting Goods and furniture business in Withee, Wis.

FRANK M. DAVIS is successor to Davis & Co. in the Hardware, Stove, Farm Implement and Sporting Goods business in Blairstown, Iowa.

FOSTER & WILSON, Harbor Springs, Mich., are successors to Foster, Burke & Wilson in the Hardware, Stove, Tinware and grocery business.

R. C. JOSEY & Co., dealers in Hardware, Stoves, Farming Implements, Mill Supplies, &c., Scotland Neck, N. C., have been succeeded by Josey Hardware Company.

J. SCRANTON is successor to Lohr Bros., Cashion, O. T., and will continue the retail Shelf Hardware, Stove, Tinware and Sporting Goods business.

THE LESLIE HARDWARE COMPANY, Sharon, Pa., with capital stock of \$25,000, have succeeded the old firm of W. O. Leslie & Son, established in 1870. The officers of the new concern are John S. Leslie, president; P. J. Koch, vice-president, and N. L. Williams, secretary and treasurer. The company have moved into new quarters, consisting of two main rooms, 20 x 100 feet each, with 60-foot wareroom and plumbing shop in the rear. They do a wholesale and retail business in Shelf and Heavy Hardware, Stoves and Tinware, Agricultural Implements, &c., having also a plumbing and steam and hot water heating department.

BAGLEY BROS. have sold their Hardware, Stove and Sporting Goods business in Creighton, Neb., to W. B. Warrington & Son.

DENISON-CARDER HARDWARE COMPANY are successors to H. C. Denison & Son in the Hardware, Stove, Farming Implement and Sporting Goods business in Rocky, O. T. The new company report business on the increase and expect soon to erect a new building or make an addition to the present quarters.

TAGGART & THURBER, in the Hardware, Stove and Sporting Goods business in Warrensburg, Mo., have been succeeded by Thurber & Christopher.

SEVERAL months since the firm style of James A. O'Neil & Son, Henderson, N. C., was changed to Maurice J. O'Neil, who has been for more than two years past the owner and manager of the business. Mr. O'Neil contemplates soon making extensive improvements in the store interior, so as to materially increase the attractiveness and convenience of his establishment. Mr. O'Neil's line embraces Shelf and Heavy Hardware, Stoves, Tinware, Agricultural Implements, Sporting Goods, &c., which are handled at wholesale and retail.

Test of Oil Sprinkling for Streets in Denver.

A satisfactory test of oil sprinkling, says *Municipal Engineering*, was completed by the Board of Public Works at Denver, Col., June 14. The test was made in Logan avenue, and the surface of the street is said to be smooth and dustless. Crude oil from Beaumont, Texas, was mixed with the residuum oil from the refineries at Florence. It was heated in the sprinkling cart by means of steam pipes connected with one of the city's steam rollers, and applied with a spray nozzle. A coating of coarse sand 1 inch thick was then applied, and in 20 minutes the street had assumed its former appearance, except for a dark grayish hue, and it was impossible to raise the dust. Another application of oil will be given in a few months, and it will also be applied to other streets. It is estimated that the streets can thus be sprinkled and cemented at a cost of 20 cents a front foot per annum, or about \$25 a lot, which will make the cost for the entire city less than the amount now expended for water sprinkling.

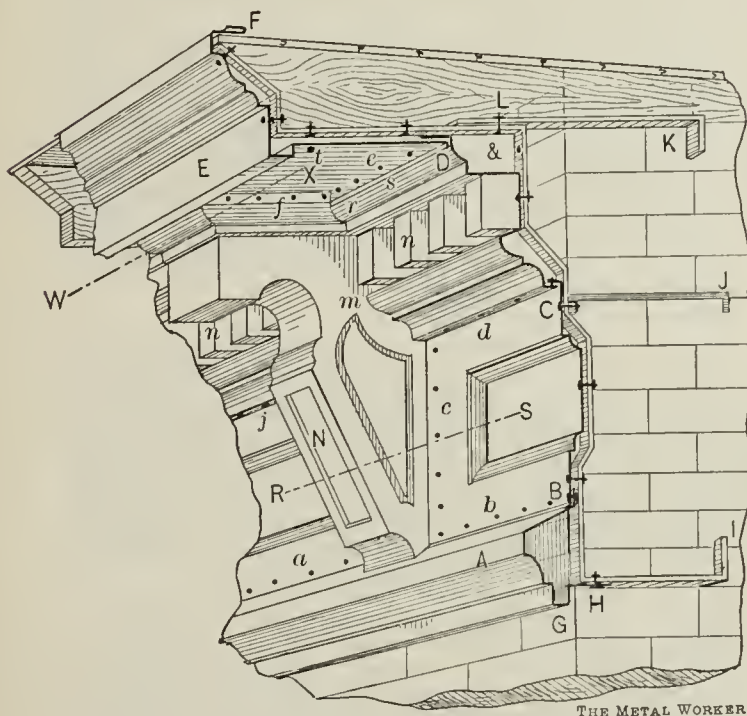
The United States *Chargé d'Affaires* at Athens, Greece, reports that an international exposition of industry, commerce, arts and hygiene will be opened at Athens, October 15. American manufacturers are invited to send their products to this exhibition.

Putting Up Galvanized Iron Cornices.

BY WILLIAM NEUBECKER.

PART II.—FIRE PROOF CONSTRUCTION.

In the large cities the use of galvanized iron for cornice work is prohibited unless erected upon iron supports. It may be well to call attention here to some general features of this kind of work. In the first place the entire cornice up to 6 feet in high is made complete on the ground, or in the shop. If the job is in the same town where the shop is located the cornice



Putting Up Galvanized Iron Cornices.—Fig. 4.—Setting the Cornice in a Fire Proof Manner with Wrought Iron Lookouts.

is finished complete in the shop, while if the job is outside and the cornice must be shipped the work is put together in parts in the shop, shipped and assembled in one piece on the ground, as described below.

In Fig. 4 is shown the method of constructing a cornice on wrought iron brackets or lookouts. The foot molding A is first placed upon the bench, and the bracket N placed in position. It will be noticed that the foot mold has an edge bent upward, as shown at B. The bracket has an edge bent outward on each side, as shown in Fig. 5, in which N represents the bracket with edges or flanges bent outward, as shown by A and B. To these the panels R and S are riveted at A and B. The brackets being all placed in position in Fig. 4 the panels R and S are next placed, with an edge bent outward at the top and bottom, as shown. The lower edge rests upon the wash of the foot molding, taking out the buckles in the face of the panel, and is



Fig. 5.—Riveting the Panels.—Section through R S in Fig. 4.

riveted to the flange bent upward on the foot molding, as shown by B. The letters a, b and c indicate how the rivets are spaced, about 2 to 3 inches apart, 2-pound tinned rivets being generally used.

After the panels are in position the dentil course is hooked onto the edge which has been bent outward on the top of the panel, as shown at C, and riveted along d j, as shown. The brackets are now soldered to the dentil course, where they intersect at m, and the dentils u are soldered in their proper positions. It will be noticed that at the top of the dentil course on the cap mold a flange has been bent outward, as at D. To this

the crown molding and planceer, which have been formed in one piece, are riveted, as shown at D. A small edge has been bent toward the outside on the rear of the planceer, as shown by r s, which, when riveted, rests tightly against the cap mold, thus insur-

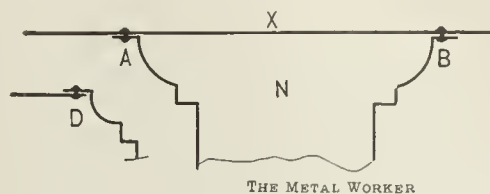


Fig. 6.—Riveting the Planceer.—Section through W X in Fig. 4.

ing a stiff joint, and at the same time taking out the waves and buckles in the flat surface of the planceer e. The crown mold E has a lock bent onto the top at F, to which the roofing is joined.

The method of fastening the cap of the bracket to the planceer X is shown in Fig. 6, in which N indicates the bracket, X the planceer and A and B the flanges bent outward on the cap of the bracket and riveted, as shown. In some cases, where the crown mold and planceer cannot be formed in one piece, it is customary to form the crown mold E, in Fig. 4, with the drip and flange as far as t, separate pieces being placed between the brackets, riveting to the flanges t and D and to the cap of the bracket, as shown by D in Fig. 6. By using pieces between the brackets in Fig. 4 the piece of metal covering the top of the bracket is saved. Where a cornice is constructed of copper it is well to plan the joints before laying out the cornice, as a vast amount of material can be saved in this manner. The same applies to the top of the modillions.

The cornice having been constructed on the ground, as above described, the next step is to insert the wrought iron lookouts or braces. These braces are made from $\frac{1}{4} \times 1\frac{1}{2}$ inch flat iron, bent to the required shape according to the detail drawing from which the cornice has been laid out. An anchor, I, is bent directly on the brace, a few inches less in length than the thickness of the wall, with holes punched where shown by the bolts. These holes should be 5-16 inch in diameter, so as to admit $\frac{1}{4}$ -inch bolts. Flat headed bolts should be employed, and the holes in the braces countersunk so as

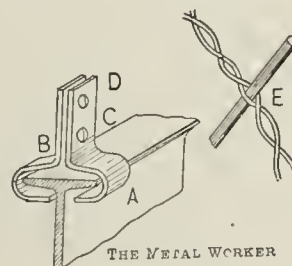


Fig. 7.—Clamp on Iron Beam.

to leave a flat surface on the outside of the cornice. The braces should be placed not more than 4 feet apart, standing and blocking up the cornice temporarily on the foot molding until the braces are in position.

By means of a small stoneman's derrick the cornice is next hoisted in place, the usual lengths hoisted at one time being 24 to 28 feet, according to the weight of the cornice. Where the cornice is longer the vertical seams are put together when the cornice sets on the wall. The cornice being set on the leveled wall H, the rope from the derrick is slackened, but not removed until the cornice is thoroughly fastened, as follows: The drip G is drawn tightly against the wall by means of wire and fastened to the beam or wall. A wire is then fastened to the brace at & and drawn taut until the cornice sets perfectly plumb, when the anchors J and K are bolted in position, as shown at C and L. When the cornice sets true and plumb the wall is carried up, as shown, firmly securing the anchors I, J and K.

On top of the leveled wall K the wooden lookout L is placed to receive the roof for the top of the cornice, and between these lookouts the brick wall is carried to the underside of the roof boards. In case of fire the

only portion to burn would be the roof and lookout L, while the cornice would remain as long as the wall stood in place.

In some cases the lookout L is made of T and angle iron and filled with fire proof blocks, on top of which the roofing is laid. When the cornice is very high and of great projection on fire proof structures the lookouts are composed mainly of T and angles bolted or riveted directly to the iron beams of the structure. The wall is then carried as high as required at H, and the cornice set and fastened directly to these T and angle iron lookouts by means of bolts or heavy copper wire or $\frac{1}{8} \times \frac{3}{4}$ inch flat band iron. This, however, only occurs on large fire proof structures, the usual method being shown in Fig. 4.

When drawing in the foot molding and the beams are of iron, and the wire cannot be fastened well, a clamp is made, as shown in Fig. 7, which can be applied to the iron beam, and when the cornice is backed up with brick can be removed and used again. A dozen clamps are usually made, to be used when necessary. A represents the iron beam, onto which the clamp B, made of $\frac{1}{4} \times 1\frac{1}{2}$ inch flat iron is bolted by a $\frac{1}{2}$ -inch bolt passing through the hole C, which, when tightened, secures the clamp and holds it in position. Through the hole D the wires used in securing the cornice are fastened. It sometimes occurs that when the wires which have been fastened at &, in Fig. 4, are fastened to the beam to hold the cornice in a plumb position they have a tendency to loosen if the wire is very heavy or hard and cannot be drawn taut. This is overcome by placing an iron rod or other object between the wires, as shown at E in Fig. 7, when, by turning, the wires are drawn taut and the cornice is drawn in as much as necessary.

(To be continued.)

THE AMALGAMATED ASSOCIATION NEGOTIATIONS.

It is reported in Pittsburg that Theodore Shaffer, president of the Amalgamated Association of Iron, Steel and Tin Plate Workers, said that the majority of the lodges of tin plate workers had voted in favor of the proposition suggested at the recent conference between the officials of the American Tin Plate Company and the Amalgamated Association. This proposition provides that the men accept a 25 per cent. reduction in wages from the present scale on certain work. By thus lessening the cost of production it is expected to retain in this country the business of the Standard Oil Company, who consume about 1,500,000 boxes of tin plates, and which at present are imported from Wales. As these plates are for making cases used in shipping oil abroad they are almost duty free under the drawback clause of the tariff. As the present rate of consumption in this country is not equal to the productive capacity of the mills, the officers of the American Tin Plate Company and the Amalgamated Association are alike desirous of manufacturing at least a portion of the 1,500,000 boxes in this country so as to keep the men and mills busy at all times. The subject is now being considered by the separate lodges, but all have not voted on the matter as yet. The outcome will probably not be known until next Monday. The officials of the Amalgamated Association are heartily in favor of the plan.

THE name selected for the new company incorporated with a capital stock of \$250,000 to erect a Sheet and Tin Plate plant at Atlanta, Ind., is the Atlanta Rolling Mill & Tin Plate Company. The directors are: Harold B. Hibben of Indianapolis, Henry Roads of Atlanta, William H. Marker of Tipton, Ind.; Henderson Coppock of Elkin, L. C. McFatrige of Nobelsville, and J. M. Whistler of Atlanta.

A PRESS DISPATCH from Canonsburg, Pa., says that a company of local capitalists have closed a deal for the purchase of the Canonsburg plant of the American Tin Plate Company for \$125,000. The new company are headed by Senator John F. Budke, formerly superintendent of the mill, and will be capitalized at \$250,000.

THE MANUFACTURE OF TIN PLATE IN SOUTH WALES.*

BY W. H. TREGONING.

The oldest industry in this country is probably that connected with the production of tin. In the earliest ages the prehistoric Briton dealt with the outside world in tin. But the real tin plate industry is of much more recent date. The hub of this industry is in the coal field of South Wales. In Glamorgan, Carmathenshire and Monmouthshire there are about 450 tin plate mills, capable of turning out between 13,000,000 and 14,000,000 boxes—that is, nearly 700,000 tons—of tin plate yearly. The early tin plate mills were nearly all driven by water power, and this fact accounts for the establishment of many of the oldest mills beyond the limits of the coal fields.

Up to the year 1891 South Wales practically made the tin plates of the world, exporting enormous quantities to America and to other parts of the world. But by far the largest customer was the United States of America. In 1891 the American market was closed to the British by the introduction of the McKinley Tariff bill, which raised the duty on tin plates from 4 shillings 6 pence to 9 shillings 9 pence per box; and then the troubles of the trade began. A box of tin plates of the size and weight upon which this duty is levied is worth in the market about 13 shillings.

After four years of the McKinley tariff the Wilson tariff came into operation, the present duty in the United States of America on tin plates being 5 shillings 7 pence per box. In addition to this duty, freight from South Wales to Philadelphia or New York works out at about 8 pence per box, while to Chicago freight charges amount to about 1 shilling 4 pence per box. Consequently the American buyer has to pay in Chicago 19 shillings 11 pence for that which can be obtained in London for 13 shillings; so perhaps it is not surprising that he prefers to make his own tin plates.

In the last ten years tin plate manufacturers have had to look around for new markets, and have succeeded in getting together a fair trade with the Continent, Austria, Russia, Australia and South America. The business of the tin plate manufacturer is not to make saucepans, boxes, milk cans, &c., but to produce the tin plate from which these articles may be made by the stamper or tinsmith. In the early days when the plates were made of iron there was but little stamping or spinning in comparison with what is done to-day. The introduction of steel, with its capacity for enduring great tensile strains, has multiplied the demand for tin plates many times. Owing to the low cost and rapidity with which cans and utensils can be turned out with stamping machinery the old trade of the tinsmith is of very much less importance than in former times, when large quantities of plates were made up into what is known as pieced work.

The principal uses of the tin plate are for all sorts of stamped or pieced ware, for decorated boxes, for the canning of fruit, meat, salmon, vegetables, condensed milk, butter, oils—especially petroleum. The oil district of South Russia and the Standard Oil Company are the largest consumers in the world. A very important use, too, is that for roofing purposes. The plate is then made in the form of terne sheets, which are sheets coated with a mixture of tin and lead. The composition of terne is varied very much by different manufacturers. A good mixture is about 3 of lead to 1 of tin.

For roofing purposes plates are extensively used in the United States of America, in Russia, and in the Danube district. For the United States roofing plates are made in sizes 14 x 20 and 28 x 20 inches, for Russia 28 x 28 inches, and for the Danube 29 x 58 inches. These are first seamed together, so as to make long strips the length of the roof from top to bottom of the gable, the several strips of seamed sheets being fastened to the close boarding of the roof with nails in a very ingenious manner, so that no nail passes through the sheets; the long strips are then seamed together, making the whole compact and rain proof. Such roofs are by no means unsightly, and if the sheets are heavily coated, there is no reason why terne roofs should not be used with advantage in this country. In addition to sending out goods in the form of tin and terne plates, the manufacturer has to supply large quantities of material in the form of black plate—that is, as steel or iron sheets in various states of finish according to their uses. Thus enameled ware is made from black plate pickled and close annealed. Special black plate is also produced for fenders, trunks, fry pans, front forks and mud guards of cycles, and countless other uses.

The principal raw materials of the tin plate manufacturer are tin, imported from the Straits Settlements, and the tin bar, a bar of Siemens or Bessemer steel of

* Paper read before the Graduates' Association of the Institution of Mechanical Engineers of England.

any convenient length, and from 7 to 9 inches wide, the weight per foot run of the bar varying according to the size and gauge of the plate to be manufactured from it. The author has called the tin bar raw material, because it is the point from which tin plate making proper begins. Some tin plate works have their own steel works attached, but the majority of manufacturers are content to buy their bars in the open market, provided they can obtain them clean and guaranteed to stand certain specified strains. In the early days of the industry common qualities were made of puddled iron, and were known as coke plates; the better qualities were made of charcoal iron and were called charcoal plates.

The manufacturer at that time made the sizes which suited him best, and the tinsmith had to cut his patterns and make his articles in such a way that the standard sizes could be used with least waste. The chief standard size was originally known as IC (that is, one Common); this was a box of 225 sheets, measuring 14 x 10 inches, and weighing in all 1 cwt. To suit the requirements of consumers wanting plates of greater thickness, plates were made of the same size, but 25 per cent. thicker—that is, each box weighing 140 pounds—and was known as IX (that is, one Cross); the next stronger thickness was IXX, and was 21 pounds heavier than IX, and so on up to eight or ten crosses. Each additional cross after the first denoted that the plates were 21 pounds heavier than IX, which weighed 140 pounds, as in the table below:

	Inches.	Sheets.	Pounds.
IC.....	14 x 10	225	112
IX.....	"	"	140
IXX.....	"	"	161
IXXX.....	"	"	182

The second standard size of early days was what is known as Common Double (CD). In this case the sheets were 17 x 12½ inches, and 100 sheets weighed 98 pounds, and, as before, to denote thicker plates of this size crosses (X) were added, XD being again 28 pounds per box heavier than CD, and each additional X marking an increase in weight of 21 pounds. Thus:

	Inches.	Sheets.	Pounds.
CD.....	17 x 12½	100	98
XD.....	"	"	126
XXD.....	"	"	147
XXXD.....	"	"	168

There was a third intermediate size, 15 x 11 inches, 200 sheets to the box, weighing 100 pounds, known as Common Small Doubles or Common Middles, but these are to-day practically obsolete; they are only called for by certain Government departments and railway companies.

The terms IC, IX, CD, XD, &c., still have a distinct commercial meaning and represent different substances, although in all cases the standard has been reduced about 4 per cent. from the weights which these originally signified, the width of the sheet being doubled, and the number of sheets per box being halved. Thus:

	Inches.	Sheets.	Lbs.		Inches.	Sheets.	Lbs.
IC.....	14 x 20	112	108	CD.....	17 x 25	50	91
IX.....	"	"	136	XD.....	"	"	122
IXX.....	"	"	157	XXD.....	"	"	143

The modern manufacturer, with his Continental trade as against the old American trade, has to work to many other sets of gauges. Thus he is prepared to make sheets:

1. To the tin plate gauge as expressed by the signs IC, IX, CD, XD, &c.
2. To the millimeter gauge.
3. To so many thousandths of an inch thick.
4. To weigh so many ounces per square foot.
5. To weigh so many grams per square meter.
6. To any other recognized gauge, such as the B. W. G., Board of Trade standard gauge, Stubbs gauge, &c.

Further he does not confine himself to plates 14 x 20 inches, but makes any size his mills will turn out. A mill suited to ordinary tin plate work will not roll to advantage sheets larger than 24 x 50 inches, 22 x 58 inches, or 20 x 60 inches. Large plates become a strain on either the men or machinery.

For larger sheets special mills with more furnace accommodation, thicker rolls, and more engine power are constructed.

Thus a 40-inch mill would roll sheets 34 x 70 inches, and a 48-inch mill would roll sheets 40 x 80 inches, or 36 x 120 inches.

In an ordinary mill the handiest sizes are found to be: 22 x 44 inches; 21 x 46 inches; 20 x 48 inches; 18 x 54 inches; 17 x 56 inches, and the like, although there is no recognized standard.

The first consideration of the manufacturer on receiving an order is to get a satisfactory tin bar. In ordering the tin bar the most important factor, which governs the length and thickness of the finished plate, is the weight per foot run of the bar. Thus in making plates 14 x 20 inches by 30 B. W. gauge—that is, by the tin plate gauge IC substance—the first question to be decided is in what way the plates shall be rolled. Thus

they might be made any length or width which is divisible by 14 inches or 20 inches, and the thickness of the plate might be arrived at by rolling on eights, fours, doubles, or singles. That is to say, the article as passed from the mill may consist of eight sheets rolled tight together of the required length and width, of four or two sheets in the same condition or of the single sheet. In this case, to make a plate 14 x 20 inches by 30 gauge, the sheets will probably be made with least waste if rolled 20 x 56 inches and the thickness of the plate will best be arrived at by finishing the pieces on "eights"—that is, the finished piece passed from the mill will consist of eight sheets 20 x 56 inches rolled tight together.

The tin mill consists of two pairs of rolls, known as the roughing and finishing rolls. The bottom rolls are coupled direct to the main shaft of the engine, while the top rolls revolve on the bottom ones. The equipment of the tin mill also consists of two furnaces where the pieces of bar may be heated, doublers—shears and squeezers and mill shears.

It is usual to have two, three or four mills lined up and driven by one engine, the auxiliary machines, such as shears, squeezers, &c., for each mill being driven off the main shaft.

The rolls are of highly chilled cast iron with an extremely hard surface, generally of about 19 inches in diameter with 13-inch necks, and varying in length according to the work they have to do. Thus rolls 28 inches long will work sheets from 18 to 24 inches wide by any length, while 38-inch rolls will work sheets from 27 to 34 inches wide. The bottom roll of the mill is connected direct to the main shaft, but the top roll is free to move up and down between the standards of the mill. This roll is kept down to its work by means of steel screws and boxes fixed in the upper part of the standard. These screws are manipulated by the roller man as he feeds his piece into the rolls and the pressure on the rolls is so adjusted that the plate leaves the rolls accurate as regards length and consequently thickness.

The rolls must be kept with some care, and will require turning up about once a week, an operation which takes from two to four hours per mill. To effect this, a slow motion must be fitted to the mill, so that the speed of the rolls may be reduced for this operation.

The piece of bar cut to the required length is first heated to a dull red heat and then passed to the roller man, who puts it through the roughing rolls, the behinder, a lad standing behind the rolls, passing it back to the roller man, who sends it through the rolls in the same way five or six times. It is then passed back to the furnaceman, and charged in the fire again. After reheating, the plate is rolled again in a similar manner—this time in the finishing rolls, and if of a very thick gauge, to be finished on singles, it will now be drawn to the required length and passed from the mill. But the plate at this stage is too thick for the majority of uses, and so requires doubling. This is the doubler's work. He folds the plate over and then puts it under a squeezer. This is simply a cast iron plate, receiving its motion from the main shaft, which rises and falls from a fulcrum, and coming down on an iron table squeezes down the piece placed on the table, so as to flatten it where it has been doubled over. This is necessary to enable the doubled end to enter the rolls on the next rolling. The doubled piece then goes back to the furnace, after which it is again rolled, and if finished on doubles it is drawn to the required length on this rolling.

If finished on fours or eights the piece must be again doubled, but this time the doubler has to do more than double, he must also shear off what is known as "the curled end;" that is to say, the end at which the first, not the new, doubling was made, so as to give four free ends at the back of the plate as it goes between the rolls. It is then reheated and once more rolled, this time on fours. If finished on fours it is drawn to the required length, the pressure on the last two "licks," or passes through the rolls, being carefully adjusted by means of the screws. If the piece is to be finished on eights it must again be doubled and squeezed; once more the curled end must be shared off, and then, after reheating, it can be rolled out to the required length in the same way as before.

As finished from the rolls the piece will consist of one, two four or eight sheets rolled tightly together. It will be an inch or two longer and broader than required and will have rough jagged edges. From the rolls the piece is passed to the shearer, who cuts it up to the finished size; or rather a trifle smaller than the final finished size to allow for the extension of the plate when passed through the cold rolls later on. From the shearer the piece passes to the opener's bench, where the plates are rapidly torn apart by the openers and loaded on trolleys for conveyance to the next process, the pickling machine.

These sheets are now in the form known as "hard from the mill," and for some purposes, such as shovel plates, are ready for use.

For certain purposes plates in this finish are careful-

ly annealed, and are then ready for use in making galvanized buckets and other similar work. For other purposes the plates, as passed from the opener's bench, are cold rolled and then annealed; such plates are used for trunk making. But for tin plate making proper these sheets "hard from the mill" have to go through many more processes. In the course of rolling and cooling the plates have become covered with an oxide which cannot be tinned, and so must be removed by pickling. The plates are therefore packed in gun metal racks and plunged into a bath of sulphuric acid, where they remain for about five minutes. The rack containing the plates is suspended in the acid from a cross bar, which is raised by steam through a height of about 2 feet, when the steam is exhausted and the bar with the rack drops in the tank of acid to be raised again. In this way the plates are kept in constant motion in the acid. When removed from the acid, the plates are suspended in the same way in a similar bath of water. The effect of this pickling is that the acid has eaten its way under the oxide, which remains on the plates in the form of a greenish black slime. This slime is removed by annealing. After pickling, the plates are packed in the annealing pots, and roasted in the annealing furnace until the slime is removed. This takes about ten hours, after which the pots are taken out and allowed to cool slowly. The annealing pots before roasting are made air tight by filling up any joints or cracks with sand. The plates are now in the form known as pickled or annealed black plate. They are of a silvery whiteness in the middle with discolored edges; and in this form enormous quantities are exported for stamping and enameling.

The plates coming from the annealing oven are considerably buckled, and further have a somewhat rough surface. This rough surface, which is so useful in enameling work, would make a very poor plate if tinned in this state. Before tinning the plate must be polished, and to this end it is passed several times through the cold rolls. This cold rolling polishes the plate satisfactorily, and, of course, lengthens it a trifle, but as the plate was sheared in the mill a trifle short of the required length it is now, on leaving the cold rolls, true to size. This cold rolling has not only polished the plate, but it has hardened it very much and has made it brittle. Consequently the next process must be in the annealing furnace once more; there the plates are roasted until they have reached a dull red heat; they are then brought out and allowed to cool slowly. The plate, as brought the second time from the annealing furnace, is known as black plate p. cr. and ca.—that is pickled, cold rolled and close annealed ready for tinning.

But it is necessary that the plate should reach the tin pot absolutely clean, without dust or grease. To attain this end, the plates are once more pickled in very dilute sulphuric acid, and after being washed in water are passed to the tin house, where they are kept in water until used in the tin pot.

In the early days of tin plate making the iron sheet was merely dipped in a bath of tin and allowed to take up just as much or as little metal as it would.

Now, however, the coating of tin must be regulated with much greater nicety, and the manufacturer must know to within 2 ounces how much tin is used per hundredweight of plates. The amount of tin varies up to about 10 pounds per hundredweight of plates. The tinning set consists in its simplest form of a tin pot, or iron bath filled with molten tin, and a grease pot filled with palm oil and containing a tinning machine.

The tinning machine is an arrangement of steel rolls about 4 inches in diameter, revolving in an iron frame, whose function it is to squeeze from the plate all superfluous tin.

The pace at which these rollers revolve can be varied within certain limits, and the pressure exerted between the rolls is capable of adjustment by means of springs and screws, so that the amount of tin left on the plate can be regulated with considerable accuracy. The steel sheet is dipped into the molten tin, through a flux of chloride of zinc, and from the bath of tin it passes up through the rolls of the tinning machine, which is working in the grease pot. On emerging from the rolls of the tinning machine the plate is caught up in a claw and carried to a rack, where it is allowed to stand for a moment for the tin to set, after which it is rubbed in fine bran to clear away all traces of oil. The plate only requires now to be dusted before being sent to the assorting room. On the assorting table the sheets are carefully picked over by experienced men, the defective sheets being packed separately from the perfect plates. The defective sheets are again picked over into waste and wastewaste. In plates of common coke quality the primes run from 80 to 90 per cent., with 17 to 9 per cent. of wasters and 3 to 1 per cent. of wastewaste.

In the heavily tinned "best charcoal" plates the assorting is much finer; plates are thrown wasters for much more trifling defects. In this quality primes run from 40 to 80 per cent. of the whole. In best plates

wasters vary according to size, the smaller the sheets the higher the percentage of primes.

The defects to which the plates are liable are: Round corners—that is, plates not full to size; ragged edges; pinchers—that is, the steel has lapped over in rolling; stripes and other untinned spots; bad surface marks, and plates improperly pickled. Stripes and other untinned spots are the general defects due to the difficulty of obtaining clean steel and clean coal.

From the assorting room the plates are weighed and reckoned, and packed in elm or birch boxes ready for shipment.

Sheet Metal Furniture.

The Art Metal Construction Company, with factories at Jamestown, N. Y., and St. Louis, Mo., and branches in ten of the more important American cities, issue a series of handsome catalogues illustrating and describing their product, consisting of sheet metal interior furnishings as distinguished from wood, in the line of counters, partitions, shelving, card index and slip cabinets, librarians' cases, ornamental bookcases, letter file cabinets, steel vertical files, desks, tables, wardrobes, lockers, roll top desks, typewriter desks, newspaper and periodical racks, museum and art bookcases, display stands and cabinet work of all kinds, in metal. The extent to which this ever increasing type of office helps is now used is indicated somewhat by the character of the buildings in which the company's sheet metal furnishings have been installed, including many public edifices in National, State, county and municipal governments as well as large business corporations, &c. In this category may be named the file rooms of the Senate, Supreme Court, Patent Office, Library and House of Representatives at Washington, State houses of 12 States, court houses and city halls in leading American cities, together with banks, insurance, railroad and telephone companies, many of the details of which are illustrated and described in the various catalogues published for gratuitous distribution. The adoption of sheet metal for cabinet work likewise reveals the marked progress made in manipulating sheet metal, which for this work is principally high grade rolled steel. A noticeable feature of the work is the treatment of corners, edges, &c., the elegant hard, smooth finish, as a rule, being fine baked enamels, relieved by brass and bronze electroplating in any effect. There is also accomplished by the substitution of steel for wood a maximum of strength and minimum of weight, the protection of valuable archives and records against fire, reduced insurance costs and an enhanced appearance from an æsthetical standpoint. A factor in the development of this industry has been the increasing cost of wood and the tendency to a decreasing cost of steel, together with the great improvements in the kind of machinery demanded for the scientific manipulation of sheet metal.

FLASHINGS.

THE four mills at the Irondale plant of the American Tin Plate Company, at Middletown, Ind., which had been shut down for repairs, resumed operations on Monday. It is said that there will be no general closing down of this plant during the summer, but that all the mills will be kept running steadily.

ACCORDING to the representatives of the American Can Company, the amount of business now being transacted by the company is considerably larger than it was a year ago at this time. The statement is made that the company are carrying on the policy of reducing the number of their plants. Originally these consisted of about 90 separate factories. These are now being reduced to about 40, and it is understood that a further reduction to about 30 will be made. The company are building a very large plant at Cleveland, Ohio, at which several of their smaller works will be concentrated.

RINALD BROTHERS, 1142 to 1146 North Hancock street, Philadelphia, Pa., are sending out a neatly prepared booklet in the interests of their Porcelain Enamel Paint. This product, it is explained, is a Paint only in so far as it is applied like one. It is actually a liquid porcelain,

which may be cleaned with soap and chemicals and is as durable and impervious as glass. It is recommended for use for all purposes in which extra fine work is desired. The manufacturers also make what they term Bessemer Paint, which is claimed to be an absolute protection against rust for galvanized iron or tin roofs and iron structural work. In order to make this Paint adhere properly to tin and galvanized iron the surface should be sponged thoroughly with a 3 per cent. solution of sulphuric acid, to be followed immediately by copious washing with clean water, in order to remove all oil or grease. If Bessemer Paint is well applied in two coatings, it is asserted that a thoroughly effective covering will be furnished to the metal. The firm also manufacture a line of Paints for special purposes, such as Ice Pipe Paint, Radiator Paint and Acid Tank Paint.

THE BRITISH BOARD OF TRADE returns of the exports of Tin and Terne Plates from British ports in the month of June, 1902, show that 4635 tons were shipped to the United States, as compared with 6540 tons in the preceding month and 5470 tons in June, 1901. For the six months ending June 30, 1902, the total shipments of British Tin Plates to this country amounted to 37,740 tons, against 24,253 tons in the first half of 1901. The total Tin Plate shipments from Great Britain in the first six months of this year were 149,939 tons, an increase of nearly 25,000 tons over the shipments for the first half of 1901.

THE PADUCAH CAN COMPANY of Paducah, Ky., have been incorporated by G. R. Davis, R. C. Davis, J. K. Bondurand and C. E. Dennis, to manufacture a patent Oil Can.

THE DAVID LUPTON SONS COMPANY have been organized in Philadelphia, with a capital of \$325,000, for the purpose of manufacturing Skylights, Cornices, Conductor Pipe, Eave Trough and a general line of Sheet Metal Specialties.

JAMES C. WYCKOFF, Tin and Sheet Iron worker, of Raritan, N. J., who met with an accident some weeks ago which laid him up, has now recovered sufficiently to be able to attend again to business.

THE UNITED STEEL COMPANY of Canton, Ohio, were incorporated this week under the laws of the State of Delaware, with a capital of \$500,000, to manufacture Steel, Coke, &c.

G. L. COLBURN, well known to the Iron and Steel trade of New England, has associated himself with Fitz, Dana & Co., 110 North street, Boston, and is traveling in their interest.

AT CANTON, Ohio, the plant of the Carnahan Tin Plate Company is in full operation. The Sheet mill of the Stark Rolling Mill Company has been idle for a couple of weeks undergoing repairs. The Canton Works of the American Sheet Steel Company have been idle for some time, and there are no immediate prospects of resumption at this plant.

TWELVE mills at the Greer Works and 20 mills at the Shenango Works of the American Tin Plate Company, New Castle, Pa., have been started up.

THE AMERICAN CAN COMPANY, New York, deny the report that they intend to erect a Tin Plate plant at Chicago. The company will, however, make a number of improvements to their plants in that city.

THE latest advices from the other side indicate that the settlement of the wage scale in the Welsh Tin Plate trade for the next 12 months is practically assured. At the last meeting of the Conciliation Board, the only question left in dispute was that of payment for "doubles." At a recent meeting of the Wages and Dispute Board, held at Swansea, the men agreed to accept payment by the area on "doubles," under certain conditions. It is regarded as almost certain that at the next meeting of the Conciliation Board a final settlement will be effected.

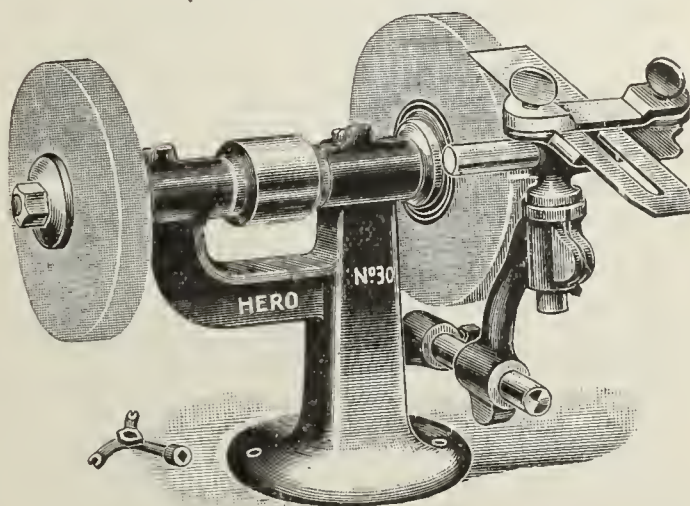
THE CINCINNATI PUNCH & SHEAR COMPANY, Cincinnati, Ohio, report business to be in a very healthy condition. Orders are not piling up at the rate they did a year ago, but are coming in evenly and steadily, keeping abreast of the capacity to produce them. Shipments

are scattered to all points of the country. The largest contract on hand at present is one for the complete outfit of Shears, Doublers, Strap Cutters and other tools for a new rolling mill at Louisville, Ky.

THE improvements to be made in the Tin Plate mills of the Lalance & Grosjean Mfg. Company, at Harrisburg, Pa., will consist of a 15-ton crane, five new annealing furnaces, two new gas producers, and 50-kw. and 75-kw. electric dynamos.

Hero Emery Grinder No. 30.

In the accompanying engraving we show what is known as the Hero emery grinder No. 30, designed for use in shops and establishments where power is available, and having a universal sliding carriage for sharpening plane irons, chisels and other tools for cutting wood. The grinder is manufactured by the Robertson Mfg. Company, 38 Greenwood place, Buffalo, N. Y., who state that with it any bevel or angle can be attained by adjusting the different connections. The claim is made that by the use of this



Hero Emery Grinder No. 30.

device tools can be ground more perfectly than at the factory where they are made, and with this method as employed in connection with the company's No. 20 grinder the bevel is slightly concave, and to finish on oil stones the edge is brought up with very little work. The machine, which is furnished with extra tool rest for ordinary grinding, has a spindle of 13-16 steel milled down on the ends to $\frac{5}{8}$ inch for wheels having turned collars with right and left hand nuts. The countershaft is furnished with tight and loose pulley, $2\frac{1}{4} \times 5$ inches; with drive pulley 2×10 inches, and a shipping lever arranged to work from right or left hand side.

THE STANDARD SANITARY MFG. COMPANY have recently opened a large warehouse at Thirty-eighth street and Eleventh avenue, New York, where they will carry a full line of goods of their own manufacture for the accommodation of the jobbing trade in Greater New York and the nearby cities. They expect to carry a complete line of everything they make, consisting of all sizes and styles of Bathtubs and a full line of their small ware. At the present time the stock consists chiefly of Bathtubs, but they will from time to time notify the jobbing trade of such articles as are added to their stock, so that they can avail themselves of the opportunity of obtaining goods promptly. All goods will be sold f.o.b. warehouse.

HERCULES FLOAT WORKS, Springfield, Mass, manufacturers of Seamless Copper Floats for high pressure work, advise us that they intend to add to their product a line of high grade plumbing goods, including Flush Valves and Self Closing Basin Cocks. Their shop is now running 14 hours a day on their regular line, but they state that their facilities will be increased to provide for the new business.

The Production of Mica in 1901.

The United States Geological Survey has completed a report of the production of mica in the United States in 1901, compiled by Joseph H. Pratt, from which it appears that the total output of sheet mica during the year was 360,060 pounds, valued at \$98,859 and of scrap mica, 2171 short tons, valued at \$19,719. In 1900 the production of sheet mica was 456,283 pounds, valued at \$92,758, and of scrap mica, 5487 pounds, valued at \$55,502. The relatively small production of mica last year can be accounted for by the low price maintained for sheet mica, by the uncertainty of the occurrence of the mica in the veins, and by the large number of small purchasers who are entirely dependent upon one small mine, and who, when the mica in this begins to give out, or is poor, have not the means to carry on much dead work, and have no other deposit to help fill out the deficiency. The importations of mica from Canada and India at a low price tend also to curtail the production of mica in the United States. This is especially true of mica imported from India, which can be mined and landed in this country at a lower price than in some cases it can be mined for in the United States. Although mica has been found in many of the States of the Union, it was only produced in 1901 in New Hampshire, New Mexico and South Dakota, by far the larger amount being obtained from North Carolina.

There has been a decided decrease in the use of mica for cutting into sheets of the various sizes which are used for stoves, chimneys, incandescent lights, &c.; but there has been a large increase in the quantities of the smaller pieces of mica that are cut by machinery into small circular disks 1 inch in diameter, and into rectangular pieces $\frac{3}{4}$ inch by 2 inches, which are used for insulation purposes and for electrical apparatus. Some of the small clear pieces of mica from the cutting of the large sheets are split very thin and rearranged and cemented and firmly pressed together, forming large sheets, which are then cut into the various shapes and sizes desired. Sheets made in this way are known as micanite. For some purposes these large sheets of micanite answer fully as well as the natural sheets, and are, of course, much cheaper. The waste or scrap mica which is not suitable for any of the above purposes has a value, when ground, in the manufacture of wall papers, lubricants, &c.

Another use for scrap mica that has been devised during the last few years is in the manufacture of covering for boiler tubes and steam pipes in general. The scraps of mica are not ground, but are broken to approximately the same general dimensions, about $\frac{1}{2}$ x $\frac{1}{4}$ inch. These pieces of mica are arranged with their longest direction and face parallel to a wire net coil, and then pressed into the shape of the pipe or tube, the layer of mica being kept tightly in place against this coil by means of heavy canvas. This kind of boiler tube covering can be made cheaply. The commercial value of this scrap mica, which is from \$8 to \$10 per ton delivered at the railroad, has made it possible to work some of the mica mines that would otherwise have been unprofitable, for in some cases the waste scrap mica represents 75 to 95 per cent. of the mica obtained.

Of the production of sheet mica in 1901, North Carolina is credited with 266,160 pounds; New Hampshire with 65,800 pounds; South Dakota with 25,000, and New Mexico with 3100 pounds. Idaho, Maine, Nevada, Rhode Island and Virginia were producers of mica in 1900, but reported no production during 1901, and in the other States, with the exception of North Carolina, there was a very noticeable falling off in the production. In North Carolina there was a decided increase in the production of sheet mica. Since 1897 there has been a constant increase in the amount of mica entered for consumption in the United States. Under the Dingley Tariff Act in 1897 imported mica is designated as "unmanufactured," and "cut or trimmed," and a specific duty of 6 cents per pound is imposed upon the former, and 12 cents per pound on the latter, with an additional 20 per cent. ad valorem on it. The imports for 1900 and 1901 were as follows:

1900.—Unmanufactured, 1,892,000 pounds, valued at

\$290,872; cut or trimmed, 64,391 pounds, valued at \$28,688; total, 1,956,391 pounds, valued at \$319,560.

1901.—Unmanufactured, 1,598,722 pounds, valued at \$299,065; cut or trimmed, 78,843 pounds, valued at \$35,989; total, 1,677,565 pounds, valued at \$335,054.

Building in Chicago.

The high prices of building materials are said to be the cause of lack of work by Chicago architects, who state that much work is being deferred until prices are lower. From every indication it would appear that the time of beginning construction is very remote, says the *Construction News*. It is not believed that prices will be lower for maybe years to come. Good evidence of this is to be found in the present active state of the steel market. Notwithstanding the activity of the market last year, when it was thought it had reached the highest point, so far as output was concerned, the output for the first half of this year has been stupendous, and there is not the slightest indication that there will be any let up for many months to come. Construction is going on at an unprecedented rate in all parts of the country, and as one class of buildings makes a demand for another class it is believed that it will continue for many years. Prosperity is not an unknown thing in this country, but it is simply that the memory of the people is so short that they soon forget a long period of depression or a long period of prosperity, and taking the immense development of this country into consideration, there is no reason why any one should express amazement at the present prosperous condition of the building trade or doubt for a minute that it will continue for a long time.

Antimony in 1901.

The chief use of antimony, says Joseph Struthers in *The Mineral Resources of the United States*, is for making alloys with lead, tin, zinc and other metals. The addition of a small quantity of antimony to lead hardens it and causes it to expand at the moment of solidification, molding the casting with clean, sharp faces, which is of special value in the manufacture of type. The most important alloys of antimony are type metal, composed of lead and antimony, with or without the addition of tin; hard lead, produced in refining antimonial lead, containing generally about 25 per cent. of antimony; Britannia metal and pewter, used extensively for table ware, the former being an alloy of tin, with from 10 to 16 per cent. of antimony and 3 per cent. of copper, and the latter an alloy of tin with a smaller amount of antimony; and antifriction metal, also called white metal and babbitt metal, which consists of antimony and tin, with an addition of small quantities of lead, copper, zinc, bismuth and nickel.

During 1901 the domestic production of antimony ore amounted to only a few hundred tons, derived from Idaho, South Dakota and California. There are a number of antimony deposits in other Western States, but on account of the present condition of the industry and the high transportation charges to smelting centers they cannot be operated with profit.

The sources of supply of antimony consumed in the United States are four in number—viz., hard lead, derived from smelting of foreign and domestic lead; imported regulus or metal, imported antimony ores and domestic antimony ores, these being given in the order of their importance. The amount of hard or antimonial lead produced from foreign or domestic lead ores in 1901 was 17,878,000 pounds, containing approximately 4,469,000 pounds of antimony. The amount of antimony metal imported during 1901 was 3,674,900 pounds. The aggregate amount of antimony available as metal or in alloy from the above mentioned sources in 1901 is estimated at 8,971,800 pounds, valued at about \$919,614. The amount produced from domestic and foreign ores in 1901 was 414 tons, valued at \$84,870. Most of the imported antimony came from Germany, France, Italy and Austria-Hungary, with a small amount from Japan. The consumption of antimony in the United States last year is placed at 4486 tons, as against 6053 tons in 1900 and 4056 tons in 1899.

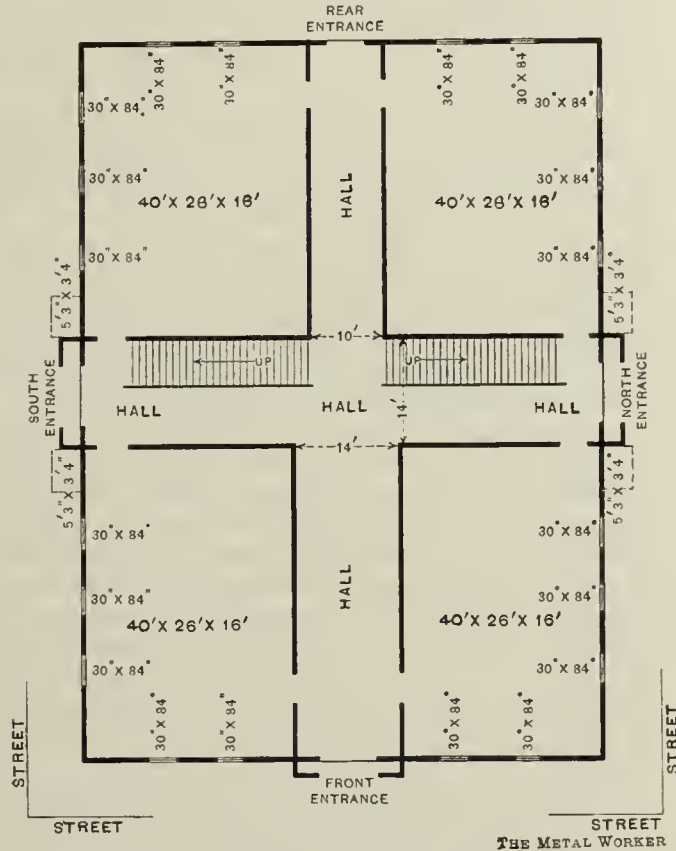
THE LETTER BOX.

Inquiries in regard to practical questions of general interest are invited, in reply to which we shall be glad to receive suggestions and information from our readers.

Correspondents are requested in all cases to give their names and addresses, which will not, however, be published or disclosed without their consent.

WANTS HELP TO HEAT A SCHOOL.

From C. S., Celina, Ohio.—Will *The Metal Worker* kindly invite its experienced furnace readers to present a successful plan for heating and ventilating a 12-room school building with hot air, the plan of the first floor of which is presented herewith and which is practically the same for the different floors, the building being three stories high? There are five windows in each room, having a glass surface of 30 x 84 inches and a double window 60 x 84 inches in each end of each of the upper halls. The first floor has doors instead of windows, although there are glass transoms over the



Wants Help to Heat a School.

doors. The rooms each have a ceiling 16 feet high. The flues now in the building cannot be used on account of being so small, but four flues can be built at the north and south entrances, as shown by the dotted lines. But there is only 5 feet 3 inches space between the offsets at the entrance and the edge of the first window. A portion of the front hall on the second floor is inclosed for the principal's office.

Note.—We hope that our furnace readers who have had experience in this kind of work will render what assistance they can to this correspondent. In the meantime we would suggest that he consult *The Metal Worker* of April 1, 15 and 29, 1899, which contain prize essays on school house heating.

COPPER FOR SMOKE PIPE.

From A. B. C., Utica, N. Y.—In reply to the inquiry of "W. J." in *The Metal Worker* of July 12, I give the following experience with a copper smoke stack: About 18 years ago I made a smoke stack from 20-ounce hard rolled copper, 8 inches in diameter and 12 feet high, with ordinary cap at the top. This was placed inside of a brick chimney 8 inches square and 12 feet high. The stack looked bright and solid for about six months, when it suddenly collapsed. What copper was left from the stack was about the thickness of tissue paper. While the outside was of a bright color, the inside was of a dark brown color. The chimney was used for a 6 horse-power boiler with anthracite coal as fuel.

WHAT WILL MAKE PUTTY HOLD?

From E. F. A., Shawneetown, Ill.—Will *The Metal Worker* or some of its readers be kind enough to tell me how to make putty adhere to woodwork and windows. The glass is 14 x 20 inches. The first time the putty came off I reprimed the sash, but with no more lasting results.

Note.—We hope our readers will not leave this correspondent without assistance. In the meantime we would suggest that the glass should first be securely fastened to the muntings by means of glaziers' points. Then the putty should be applied, but the woodwork should have been previously painted with a good white lead paint. After the putty is applied, if it is protected with another coat of paint the oil will not be so likely to bake out of the putty and leave it a soft powder, or, through lack of oil, cease to adhere to the wood.

HOW TO MAKE A SPARKING COIL.

From Amateur, Cincinnati.—Will you kindly advise me through the Letter Box how to make a sparking coil sufficiently strong to generate a spark that will light paper or cloth? How many ordinary dry batteries would be required to use for this purpose?

Answer.—For a sparking or induction coil strong enough to ignite paper or cloth make a magnet core of a bundle of soft No. 20 iron wire $\frac{3}{4}$ inch in diameter and 6 inches in length, wrapped in two thicknesses of strong paper laid with shellac varnish for insulation. Put thin wooden spool heads on the ends of the core wrapping, fastened with shellac varnish. Then wind the spool with four layers of No. 16 cotton covered copper wire, with shellac varnish on each layer, passing the wire ends through holes in the spool head at the level of the last layer. Cover the coil with four thicknesses of wrapping paper well shellacked for insulation from the secondary current.

For the secondary coil, wind with 12 ounces of No. 34 double silk covered copper wire, commencing by passing the end of the wire through a hole in the spool head close to the paper winding of the primary coil. Cover each winding of the secondary coil with two thicknesses of wrapping paper, well shellacked to make the insulation perfect against short circuiting of the secondary current. Special care in closing each paper winding against the spool heads is very essential to prevent burning out. Dry the shellac varnish as the work proceeds.

With 10 medium sized dry batteries in series, a $1\frac{1}{4}$ -inch spark may be obtained between wire terminals or a $\frac{1}{2}$ -inch hot spark between brass balls of $\frac{3}{4}$ inch in diameter. With eight Edison-Leclanche cells and a vibrating attachment a brilliant spark effect may be had between the brass balls.

WHO MAKES HINKLE CARPET STRETCHERS?

From George A. Hawley, Canaseraga, N. Y.—Will you please insert in the Letter Box the following inquiry? I have a carpet stretcher with "Hinkle, Indianapolis, Ind." cast on it, and am anxious to know who makes this stretcher.

EMIL SCHNEIDER, 306 South street, Newark, N. J., is offering Schneider's Soldering Salts for use in soldering tin, zinc, copper, brass, iron, &c. These Salts are put up in bottles of $\frac{1}{2}$, 1, 2 and 5 pounds. For use, the Salt is simply dissolved in water in proportions suitable to the strength required. Mr. Schneider is also manufacturing a Soft Soldering Fluid for use with all kinds of metals. This Soldering Fluid is put up in two grades, denominated "Triple Strength" and "Extra Concentrated." His Hard Soldering Fluid is especially adapted for use with gold and silver. It is also applicable to copper and brass. Another product of interest to the trade is a nonpoisonous Soldering Grease for soldering copper wires. He is also the maker of a Brazing Powder, which is claimed to be especially effective for brazing purposes. H. Weiss & Co., 20 Cliff street, New York, are selling agents for these products.

TRADE REPORT.

MARKET SUMMARY.

Pig Tin is dull and weak, ruling $\frac{1}{2}$ c. lower in price.
Copper rules weak, with a light demand.
Pig Lead is dull and firm in price.
Spelter continues scarce and strong, with light demand.
Antimony is quiet and unchanged.
Nickel is in good demand and without change in price.
Aluminum is firm and in good demand.
Tin Plates are quiet, with prices unchanged.
Black Sheets are quiet, except for the heavy gauges, and the market is without change.
Galvanized Sheets are in better demand and prices are firmer.
Old Metals are quiet and unchanged.
Foundry Iron is very scarce and prices nominal.
Sheet Copper is in fair demand and firm in price.
Sheet Zinc is firm; demand is moderately active.
Block Tin Pipe is firm and active.
Sad Irons are very active and firm, with a slight advance in price on some lines.
Sash Weights are in active demand, and prices have an upward tendency.
Wire Nails are moving in fair volume, with quotations unchanged.
Cut Nails are unchanged.
Window Glass is quiet but firm.
White Lead is strong, with some scarcity.
Linseed Oil continues firm, with moderate demand.
Spirits Turpentine is moving more freely and rules a shade higher.

METAL MARKET.

NEW YORK, July 25, 1902.

Pig Tin.—The market for Pig Tin has been quiet, with a light volume of business. Only the smaller consumers are buying and that in a hand to mouth way. Prices have declined sharply in this market, as well as in London, the tone at the close being weak, with quotations about $\frac{1}{2}$ c. lower than those prevailing at the date of our last report. Straits Pig in small lots is quoted by jobbers at $29\frac{1}{4}$ c. to $29\frac{3}{4}$ c. per lb. Arrivals so far this month have amounted to 1507 tons, with 3368 tons afloat. The demand for Tin at this time of the year is ordinarily at its lightest, and this, with the weakness in the London market and increasing stocks, has served to bring about a decline in prices.

Copper.—There has been continued weakness in this metal and wholesale prices are a shade lower than last week, the market having continued to sag from day to day. While the consumption of Copper is said to be heavy, it is mainly being supplied by deliveries on contracts placed some time since. Consumers are purchasing very little metal at present prices, the impression being abroad that prices are liable to be lower in the future rather than higher. The situation is considered as decidedly in the buyer's favor, the production being large, as well as the imports, while exports are decreasing. Jobbers quote Lake Ingot in small lots at 13c. per lb., and Casting Copper at $12\frac{1}{2}$ c. to $12\frac{3}{4}$ c.

Sheet Copper.—Manufacturers report a steady demand for Sheet Copper, while prices remain firm on the basis of 18c. per lb. from store. Some of the Copper rolling mills are closed down for their annual repairs and overhaul, consequently the production is at present restricted.

Pig Lead.—Very little life is shown in this market. Buying is on a moderate scale, and prices are unchanged. American Pig in small lots is quoted at 4.45c. to $4\frac{1}{2}$ c. per lb.

Spelter.—This metal is still very strong and advancing with a marked scarcity of spot Spelter. The demand at the same time is very light, otherwise prices would be likely to go soaring to a much higher level. Jobbers quote good Western brands in small lots at 6c. to $6\frac{1}{2}$ c. per lb. It is reported that officials of the American Smelting & Refining Company are negotiating for the acquisition of the Clark-Coolidge Zinc and Lead properties in Missouri. No significance is attached to the report in the trade. Even should they acquire these properties they are of so small importance that the situation would remain unchanged. St. Louis advices report that the active call for Spelter continues and prices have reached a higher level.

Sheet Zinc.—The demand for Sheet Zinc is of ordinary proportions, and prices are very firm at $6\frac{3}{4}$ c. per lb. for 600-lb. cask lots, and $7\frac{1}{4}$ c. to $7\frac{1}{2}$ c. for smaller quantities.

Antimony.—No change has taken place in this metal, and the demand for it is somewhat limited. Cookson's in small lots, is quoted at $10\frac{1}{2}$ c. to $10\frac{3}{4}$ c. per lb., and Hallett's $8\frac{3}{4}$ c. to $8\frac{7}{8}$ c., and other brands at $8\frac{1}{2}$ c. to $8\frac{3}{4}$ c.

Nickel.—This metal is unchanged. Small lots are quoted at about 5c. per lb.

Aluminum.—The demand for Aluminum continues active and prices are without change. Small lots of No. 1 Ingot, guaranteed 99 per cent. pure, are quoted at 37c. per lb. and 100-lb. lots at 35c.

Tin Plates.—No change worthy of note has taken place in the Tin Plate market during the week. Extreme dullness is the ruling characteristic. Buying is on the smallest possible scale. No large orders are reported, and such business as was done was purely of a retail, hand to mouth character. Prices show no change, jobbers quoting American Bessemer Coke Plates, I C, 14 x 20, in moderate sized lots, delivered at New York and corresponding points, at about \$4.75 to \$4.90 per box. An advance of $1\frac{1}{2}$ d. in the price of Welsh Plates was reported this week, the quotation now being 13s. $4\frac{1}{2}$ d. f.o.b. Swansea.

Sheets.—A fair amount of business in Black Sheets has been placed within the past few days, mainly for the heavier gauges, and a slightly better inquiry for Galvanized Sheets is reported, the tone of the market on the latter being claimed to be stronger. The output of Sheets has been cut down a good deal by the suspension of operations at a number of the mills for repairs and stock taking. Some of these mills will not get started for another two or three weeks, consequently the Sheet product of the country will be materially reduced. Stocks of Sheets at some of the mills and in the hands of some few jobbers are reported to be increasing. For small lots, jobbers quote about 3.70c. on No. 27, One Pass Cold Rolled Soft Steel Sheets, and 4c. to 4.10c. on Galvanized.

Chicago advices are as follows: Heavy Sheets have continued steady, with a fair demand, but there has been no improvement in the call for Light Sheets, which are weak. A report was current that the American Sheet Steel Company have reduced prices, but this was denied. Galvanized Sheets are especially heavy with various discounts made by most dealers. Quotations are unchanged. No. 27 Black Sheets in small lots from store are quotable at 3.45c. to 3.55c., and Galvanized Sheets at 4.70c. to 4.75c. for No. 27.

Old Metals.—The market for Scrap is rather quiet, but prices show little change. Dealers are paying about the following rates for moderate sized lots, delivered at New York or corresponding points:

Heavy Copper.....	per lb. 10 c.
Light and Tinned Copper.....	per lb. 9 c.
Heavy Brass.....	per lb. 8 c.
Light Brass.....	per lb. $6\frac{1}{4}$ c.
Lead.....	per lb. $3\frac{5}{8}$ c.
Tea Lead.....	per lb. 3 c.
Zinc.....	per lb. $3\frac{1}{4}$ c.
Pure Aluminum Sheet.....	per lb. 22 c.

Cast Aluminum.....	per lb.	17 c.
No. 1 Pewter.....	per lb.	18 c.
No. 2 Pewter.....	per lb.	9 c.
11n Plate Scrap, per gross ton.....		\$5.00
Wrought Iron Scrap, per gross ton.....		\$13.00 to 13.50
Heavy Cast Scrap, per gross ton.....		12.00 to 12.50
Stove Plate Scrap, per gross ton.....		8.50 to 9.00
Burnt Iron, per gross ton.....		7.00 to 7.25

THE PIG IRON MARKET.

NEW YORK.—The Anthracite Coal miners' strike is causing increasing trouble among Eastern foundrymen. They have contracted for all the Iron needed this year, but cannot get it, as the furnaces are running so irregularly, which not only reduces their product but often causes the quality to be much under contract grade. Numerous foundrymen are therefore depending on Scotch, English and German Iron to keep them running. Southern furnace companies have agreed on the basis of \$17. Birmingham, for No. 2 Foundry for the first six months of 1903. Prices of both Northern and Southern Iron are much higher for anything like early delivery than for next year's shipment. Consumers in distress for stock have been known to pay \$25 or more for No. 2 Foundry the past week. For 1903 the following quotations are made: Northern Iron, at tidewater, No. 1 X, \$23.50 to \$25; No. 2 X, \$22.75 to \$23.50; No. 2 Plain, \$22.25 to \$22.50. Tennessee and Alabama brands are quoted as follows: No. 1 Foundry, \$22.50 to \$23.50; No. 2 Foundry, \$21.75 to \$22.50; No. 3 Foundry, \$21.25 to \$21.75.

CHICAGO.—Heavy sales of both Northern and Southern Iron for deliveries during the first half of 1903 have been made during the week. Stove foundries and Pipe works have been among the large buyers, as well as jobbing foundries. The Northern Foundry Iron has been sold mainly on the basis of \$21, Chicago, for No. 2, and the Southern Iron mainly on the basis of \$17, Birmingham, for No. 2. Spot Iron and Iron for early shipment is very difficult to obtain and command a heavy premium. There have been sales of 1200 tons of irregular mixed lots of Foundry Iron at about \$24, delivered. The settlement of the labor difficulties in the Birmingham district has been followed by a more confident feeling. One Southern furnace is reported to have sold its entire capacity up to July, 1903, and other Southern furnaces are demanding all the way from \$17 to \$18 for No. 2 for next year's delivery. Charcoal Iron is especially scarce, and Southern brands have been advanced \$2 per ton. While the following quotations are relatively those current for delivery during the current year, they are little better than nominal, and future quotations will be based upon sales made for next year's delivery, with premiums given on delivery during the current year and on cash transactions:

Lake Superior Charcoal.....	\$25.00 to \$26.00
Local Coke Foundry, No. 1.....	22.00 to 22.50
Local Coke Foundry, No. 2.....	21.50 to 22.00
Local Coke Foundry, No. 3.....	21.00 to 21.50
Local Scotch, No. 1.....	22.50 to 23.00
Ohio Strong Softeners, No. 1.....	24.00 to 25.00
Southern Silvery, according to Silcon.	24.65 to 25.15
Southern Coke, No. 1.....	24.15 to 24.65
Southern Coke, No. 2.....	23.65 to 24.15
Southern Coke, No. 3.....	23.15 to 23.65
Southern Coke, No. 1 Soft.....	24.15 to 24.65
Southern Coke, No. 2 Soft.....	23.65 to 24.15

PITTSBURGH.—A heavy buying movement is going on in No. 2 Foundry Iron for delivery next year, and a large tonnage has been sold on the basis of \$21.75 to \$22, Pittsburgh. Coke is still very scarce, and, further, furnaces in the Valleys have been compelled to bank.

CINCINNATI.—The Pig Iron market shows little change from the conditions of a week ago. The result of the fixing of 1903 Southern Iron on the basis of \$17, Birmingham, for No. 2 Foundry, is seen in the fact that no Iron is now being offered on the basis of \$16.50, Birmingham, which was the ruling price a week ago. The amount of Foundry Iron in sight is nothing beyond a meager dribble, which comes from various sources. Under these circumstances prices are naturally strong and as high as they have been. Offerings of Northern Irons are very scarce, and prices practically unchanged. The market is a good deal of a vacation one at the present time. We quote, f.o.b. Cincinnati, for 1902 delivery as follows, this year's delivery:

Southern Coke, No. 1.....	\$21.25 to \$22.25
Southern Coke, No. 2.....	20.75 to 21.75
Southern Coke, No. 3.....	20.25 to 21.25

Southern Coke, No. 4.....	19.75 to 20.75
Southern Coke, No. 1 Soft.....	21.25 to 22.25
Southern Coke, No. 2 Soft.....	20.75 to 21.75
Ohio Silvery, No. 1.....	24.60 to 25.10
Ohio Silvery, No. 2.....	24.10 to 24.60
Lake Superior Coke, No. 1.....	25.10 to 25.60
Lake Superior Coke, No. 2.....	24.60 to 25.10
Lake Superior Coke, No. 3.....	24.10 to 24.60

CHICAGO REPORT.

Scrap Iron and Steel.—A stronger tone has developed under moderate offerings and a good demand; for some kinds of Scrap dealers are paying an advance of 50c. per ton. The current offerings are bought, in carload lots, Chicago delivery, as follows:

	Per net ton.
Country Wrought Scrap.....	\$14.50 to \$15.00
Machinery Cast.....	12.50 to 13.50
Malleable Cast.....	12.00 to 13.00
Stove Plate (free from burnt).....	9.50 to 10.00
Burnt Iron and Grate Bars.....	8.00 to 9.00
Sheet Iron and Hoops.....	8.00 to 9.00
Plow Steel.....	12.00 to 13.00
Breaking Stock.....	11.00 to 12.00
Old Boilers—whole (Iron).....	9.50 to 10.00
Old Boilers (Iron) cut in single Sheets and Rings.....	12.50 to 13.00
Old Gas Pipes and Boiler Tubes.....	12.50 to 13.00
Cast Borings.....	8.50 to 9.00
Turnings.....	12.00 to 12.50
Horseshoes.....	14.00 to 14.50

Old Metals.—With freer offerings of Copper and no improvement in the outlet the market has been slow and weaker, with Copper Wire, Bottoms and Clips lower. Zinc has been strong and higher. The following prices are being paid by dealers in this market:

	Per lb.
Copper Wire and Heavy.....	10 1/2 c.
Copper Bottoms.....	9 3/4 c.
Copper Clips.....	10 1/4 c.
Red Brass.....	10 3/4 c.
Yellow Brass.....	8 1/4 c.
Red Brass Borings.....	9 1/4 c.
Yellow Brass Borings.....	7 1/2 c.
Light Brass.....	6 3/4 c.
Pipe Lead.....	3.70 c.
Tea Lead.....	3.35 c.
Zinc.....	3.35 c.
Tin Foll.....	21 c.
Pewter, No. 1.....	18 c.
Pewter, No. 2.....	11 c.
Aluminum.....	20 c.

Old Rubber.—The offerings have been moderate and the market has been quiet but steady. Prices paid by dealers are as follows:

	Per net ton.	Per lb.
Garden Hose.....	\$25.00	.....
Air Brake Hose.....	45.00	.....
Rubber Shoes.....	.....	7 c.
Rubber Car Springs.....	.....	5 c.
Inside Bicycle Tubing.....	.....	22 c.
Outside Tubing.....	.....	5 1/2 c.
Black Rubber.....	.....	4 c.
White Rubber.....	.....	8 1/2 c.

Rags.—A slightly better tone has developed for Mixed Rags, the demand showing some improvement, but no change in prices has resulted. Dealers continue to buy liberal offerings at 65c. to 75c. per 100 lbs., Chicago delivery.

Anthracite Coal.—Stocks at the mines are being much reduced, although the demand is only moderate, and the market remains firm with no change reported in labor conditions at the mines. Following are the prices current, subject to a discount of 20c. for shipment made during July:

	Grate.	Egg and Stove.
Chicago.....	\$5.75	\$6.00
Millwaukee, Wls.....	5.75	6.00
St. Louis.....	6.20	6.45
Kansas City, Mo.....	8.25	8.50

I. B. WILLIAMS & SONS, manufacturers of Leather Belting, Lace Leather, &c., advise us that they are fitting up and stocking a complete store for the sale of their goods at 722 Arch street, Philadelphia. They will also handle, in connection with their Leather goods, a full line of Mill, Mine, Railroad and Engineers' Supplies and Power Transmission Machinery. The company, who have branch offices in New York, Chicago and Boston, have opened this Philadelphia agency for the benefit of their customers in that district. They have entered into partnership with Harry S. Huhn and W. J. M. Weaver, both of whom are experienced in the business, and the Philadelphia branch will be under the personal supervision of those gentlemen. They will be pleased to receive at the Philadelphia branch copies of catalogues and price-lists from manufacturers or dealers in lines in which they are interested.

THE HARDWARE TRADE.

The month which is perhaps the quietest in the year, so far as general business is concerned, draws to a close without any important change in the commercial or mercantile situation. There has been no weakening of prices of such a character as to indicate any lack of strength in the market for Hardware and Iron products, and while there has been a natural letting up of the demand the volume of business has been on the whole satisfactory. Crop conditions, notwithstanding unfavorable reports from some sections, are undoubtedly on the whole such as assure great crops, which will serve as the basis of a widespread prosperity. While in the market for Hardware and related goods there is a general recognition of the existence of high prices, as viewed in the light of past experience, the absorbing power of the country and the great volume of goods which are going rapidly into consumption keep stocks all along the line down to what is in many cases an uncomfortably low level, and makes the market to have in general a decidedly strong and confident tone. Careful merchants are watching closely a few spots where weakness is expected sooner or later to develop, and in some of them there are signs that the goods are beginning to feel the effect of competition, which has been encouraged by high prices, and in some cases by the temporary control of the market, as it is called, by leading interests, or by agreements in one form or another between the manufacturers. The development of the producing capacity of the country is finding constant illustrations in the establishment of new plants or the enlargement of existing ones, so that there is scarcely a line in which the ability of the manufacturers to turn out goods has not been materially increased since the beginning of the present prosperous era. All this contributes directly to the activity of trade and the well-being of the people, but has its obvious bearing on the conditions which will prevail when anything occurs to check consumption and to bring about the reaction which must be anticipated. Fortunately all the indications point to a continuance of prosperous conditions and active business during the period upon which the trade is about to enter.

NOTES ON PRICES.

Plumbers' Supplies.—The demand from the city trade is very slack and some falling off in the volume of out of town business is reported by the Plumbing Supply houses. Midsummer dullness and the vacation season are having their usual effect on the trade. Plenty of work is in prospect, however, and with the present strength of prices in all lines, the outlook is favorable for a good and profitable business in the late summer and fall. Most of the orders now coming in are for repair jobs, although a few good sized contracts for material for new buildings are coming into the market. No changes in prices of Plumbers' and Steam Fitters' Supplies took place this week, but strength continues to characterize practically all lines. Iron Goods are specially strong with advancing tendency, in correspondence with the rising condition of the Iron market.

Cast Iron Soil Pipe.—The manufacturers of Cast Iron Soil Pipe and Fittings are putting the local jobbing trade to considerable inconvenience by their inability to fill orders promptly and complete. Four-inch Pipe has completely disappeared from the market, and all that is reaching here from the local foundries is immediately gobbled up by the local trade. The out of town trade is receiving very poor attention on Cast Iron Soil Pipe and Fittings owing to the fact that the local plumber is on the ground and is continually demanding deliveries, and in order to appease him the jobbers are filling his orders before those of the customers who are at a distance and are consequently not able to make their appeal in person. Prices have remained unchanged up to the present. Prices to the local trade which were recently issued have been adopted by the local jobbers, and the indications now are that there will be no change to the

retail trade for some time to come. There is a possibility, however, of the manufacturers being compelled to advance prices to the jobbing trade, owing to their inability to procure Iron purchased at old prices.

Lead Washers.—The Littleford Brothers, Cincinnati, Ohio, under date of July 16, issue a new price-list on Lead Washers. The price is now 20 cents per pound, less the following discounts:

For orders of 10 boxes.....37½ %
For orders of 5 to 9 boxes.....35 %
For orders of 1 to 4 boxes.....32½ %
For orders less than 1 box, list price.

The boxes contain 100 pounds each, and the Washers run 325 to the pound. Terms 30 days net, 2 per cent. for cash in 10 days.

The American Radiator Company, under date of July 21, announced that the Rococo Radiator prices, steam and water, were advanced 5 per cent., to take effect at the close of business on July 19. They say that this change does not affect any of their other styles of Radiators, and does not apply to any of their three-column patterns.

The Walworth Mfg. Company, Boston, Mass., have withdrawn all quotations for Walworth Die Plates and announce that new discounts will be quoted upon application.

Sad Irons.—This line is in active demand, and the market, owing to this fact and the price of the raw material, is decidedly firm. Some of the manufacturers have recently made a slight advance, but others are quoting as before.

Oilers.—The condition of the market in Oilers is represented in the following quotations recently issued by Wm. Vogel & Bros., 37-47 South Ninth street, Brooklyn, N. Y. Terms, 60 days, or 2 per cent. discount for cash in 10 days, f.o.b. New York.

	Discount.
Chace's Pattern Steel Oilers, tin bottoms.....	70 and 10 %
Chace's Pattern Steel Oilers, brass bottoms.....	70 and 10 %
Improved Paragon Steel Oilers, detachable drip cup.....	70 and 10 %
Chace or Paragon Brass or Copper Oilers.....	50, 5 and 2½ %
Automatic Steel Oilers.....	45 and 5 %
Automatic Brass or Copper Oilers.....	35 and 5 %
Engineers' Drip Oilers.....	50 and 5 %
Steel Oil Fillers.....	25 and 5 %
	Per gross.
No. 701, Round Mowing Machine Oilers, steel, in bulk.....	\$5.00
No. 701, Round Mowing Machine Oilers, cop. pl'd, ".....	7.00
No. 701, Round Mowing Machine Oilers, japanned, ".....	6.00
No. 698, Round Mowing Machine Oilers, steel.....	5.00
No. 698, Round Mowing Machine Oilers, japanned, ".....	6.00
No. 699, Oval Mowing Machine Oilers, steel.....	5.75
No. 700, Dome Mowing Machine Oilers, steel.....	5.75
No. 710, Round Mowing Machine Oilers, copper plated, heavy.....	9.75
Comet Sewing Machine Oilers, polished.....	3.25
No. 00, Sewing Machine Oilers, polished.....	3.25
No. 00, Sewing Machine Oilers, japanned.....	3.50
Extra spouts for all Oilers, brass or copper, 15 %; tin, 35 %.	

Sash Weights.—The market for Sash Weights appears to be in excellent condition, and the advances recently made, both in the East and West, are well maintained. Factories generally are short of stock and report a large demand, so much so that it is impossible for them to make as prompt shipments as usual. In view of this condition of things, even in the dull season, it is thought not unlikely that when the fall business opens there will be something of a scarcity of goods, and this fact will probably contribute to the strength of the market. Several of the manufacturers express the opinion that the price of Weights is likely to advance under the pressure of orders from the dealers, in view of the fact that factories may not be able to take care promptly of current business.

Soapstone Goods.—Pike Mfg. Company, Pike Station, N. H., and 151 Chambers street, New York, quote the following prices on Soapstone Griddles, subject to a discount of 33 1-3 per cent.:

Round Griddles.		Per dozen.
10 inches diameter.....	\$8.75	14 inches diameter.....\$16.75
12 " ".....	12.50	16 " ".....18.75
Oval Griddles.		Per dozen.
8 x 16 inch.....	\$13.00	11 x 22 inch.....\$22.50
9 x 18 ".....	15.00	12 x 24 ".....27.00
10 x 20 ".....	18.75	

Foot Warmers are sold from the following list, which is subject to a discount of 40 per cent.:

Foot Warmers.		Per dozen.	Per dozen.
4 x 6 inch.....		\$2.50	8 x 10 inch.....\$5.00
5 x 7 ".....		3.12	8 x 12 ".....5.62
6 x 8 ".....		3.75	10 x 12 ".....6.25
7 x 9 ".....		4.37	12 x 15 ".....7.50
7 x 10 ".....		4.75	

Fence Staples.—Some shading of prices on Fence Staples is reported, but the market on these goods, as a whole, is fairly strong and the demand active.

Block Tin Pipe.—The demand for Block Tin Pipe is referred to as very satisfactory this season. The price of this material, which has fluctuated to some extent with the changes in the price of the raw material, is now 37 cents per pound.

Wire Nails.—The store demand for small lots of Wire Nails continues in fair volume. Quotations remain unchanged on the basis of \$2.30 per keg for small lots, New York. The output of Wire Nails has been much reduced by the closing down of mills for the annual repairs and cleaning up.

Cut Nails.—The condition of the Cut Nail market is unchanged, except that mills are making shipments more promptly. The requirements at this point are moderate, and prices are without change. Small lots from store are quoted at \$2.30 per keg.

Window Glass.—There is nothing of interest in the local Glass market, which remains quiet. The Jobbers' Association quotation for Single and Double Strength Glass from store is 88 and 5 per cent. discount.

White Lead.—The White Lead in Oil which is now going into consumption is being drawn to a considerable extent from purchases made some time since. Some makers have fallen so far behind in their deliveries that they are asking the indulgence of their customers until they will be in position to fill orders promptly. Prices are firm and without change, White Lead in Oil in small lots being quoted at 6½ to 6¾ cents per pound.

Linseed Oil.—There is an absence of large demand for Linseed Oil, orders being confined to present consumptive requirements. The market continues firm in tone and unchanged as to prices. City Raw, in small lots, is quoted at 68 to 68½ cents per gallon.

Spirits Turpentine.—Quite a large quantity of Turpentine was taken by canners and varnish makers at the close of last week, after which the demand was light. Firm advices from the South during the first part of this week resulted in a stronger market at this point, with more ready buyers and a slight stiffening of prices. Turpentine in small lots from store is quoted at 47½ to 48 cents per gallon.

TRADE NOTES.

THE WHITTAKER & WEBER MFG. COMPANY, St. Louis, Mo., manufacturers of Tinware, Stamped Ware, &c., of all varieties, have introduced their goods in the foreign markets, and within the past few days have made a large shipment to Liverpool, England.

THE BAY STATE ALUMINUM COMPANY, Quincy, Mass., manufacturers of Aluminum Ware, Chafing Dishes, Kitchen Utensils and Specialties, &c., report that they are very busy and have more orders now on their books than they can fill in two months. The business of the concern has grown rapidly of late. Leon Ward, manager of the company, advises us that they are having a big run on their Individual Communion Services. The company's factory is equipped for doing all kinds of experimental work in Aluminum.

THE PALEN TIN FOIL factory of Kingston, N. Y., one of the largest concerns of the kind in the United States, has been purchased by the Republic Tin Foil Company, who propose to increase the capacity of the plant.

THE DETROIT COPPER & BRASS ROLLING MILLS state that they expect to erect and operate a Tube plant at Detroit.

THE JOHN DUNLAP COMPANY of Pittsburgh, manufacturers of Tinware, have commenced work on a new

plant at Carnegie, near Pittsburgh. There will be two main buildings of brick and steel construction, one measuring 70 x 250 feet and the other 40 x 250 feet.

THE BRASS foundry of the Charles Parker Company's plant, Meriden, Conn., was recently destroyed by fire. The loss will reach \$5000.

M. H. TREADWELL & Co., 95-97 Liberty street, New York, have recently moved their estimating department to their Lebanon, Pa., works, where they would be pleased to receive a full line of catalogues, illustrated circulars and price-lists relating to engineering, founding, or anything in the way of special machinery.

THE sympathy of *The Metal Worker* is extended to Charles Burton of *Stoves and Hardware*, St. Louis, whose father, Charles W. Burton, died at his home in Plainfield, N. J., on the 18th inst. The deceased had for many years been engaged in the wholesale grocery trade in New York, but for the past 15 years had been connected with the Tide Water Oil Company, New York. He would have been 80 years of age in September.

CONTENTS.	
Editorials—	Page.
No Gen-ral Strike of Coal Miners.....	39
Prepare for Fall Trade.....	39
Quality in Demand.....	39
Employers and Employees.....	40
Interesting Phases in the Iron Industry.....	40
What the Stove Trade Needs.....	41
A Furnaceman's Reputation.....	41
Shop Conditions.....	42
Take a Look at This Stove. Illustrated.....	42
The Kernan Shell Bar Grate Illustrated.....	43
The McClary Mfg. Company's Proposed Enlargement.....	43
Additional Clauses to Molders' Conference Agreements.....	44
Monarch Gas Heaters and Ovens.....	44
Mueller Furnaces in the East.....	44
The Union Stove Works.....	44
Odd Plates.....	45
Sidney Shepard & Co.....	46
Pennsylvania Retail Hardware Dealers' Association.....	46
Improved Banner Oil Heaters. Illustrated.....	47
The Savin Ice Pad. Illustrated.....	47
Sherwin-Williams Company.....	47
The Tryon Wrench.....	47
Trapping Wash Trays and Sinks. Illustrated.....	48
Proposed Tube Mills at McKeesport.....	48
How to Set Fuel Oil Burners.....	48
"How Best to Heat Our Homes.".....	49
Exhibition of Vacuum Heating and Valves.....	49
The Drake Series "C" Acetylene Generator.....	49
A Gas Pressure Gauge. Illustrated.....	49
A Labor Exchange.....	49
The Huxley Valve. Illustrated.....	50
Cooling a Laundry.....	50
Pneumatic Water Closets. Illustrated.....	51
Death of C. J. McCubbin.....	52
The Colwell Lead Company.....	52
Brooklyn Master Plumbers' Outing.....	52
Three-Column Penn Radiator Illustrated.....	53
New York City Notes.....	53
New Jersey State Association of Master Plumbers.....	53
Newark, N. J., Master Plumbers' Outing.....	53
Connections with Vitrified Pipe Sewers.....	54
Heating and Plumbing Notes.....	54
New Firms and Changes.....	55
Commercially Pure Aluminum.....	55
Stove and Hardware Dealers.....	56
Test of Oil Sprinkling for Streets in Denver.....	56
Putting Up Galvanized Iron Cornices. Illustrated.....	57
The Amalgamated Association Negotiations.....	58
The Manufacture of Tin Plate in South Wales.....	58
Sheet Metal Furniture.....	60
Flashings.....	60
Hero Emery Grinder, No. 30. Illustrated.....	61
The Production of Mica in 1901.....	62
Building in Chicago.....	62
Antimony in 1901.....	62
The Letter Box—	
Wants Help to Heat a School. Illustrated.....	63
Copper for Smoke Pipe.....	63
What Will Make Putty Hold?.....	63
How to Make a Sparking Coil.....	63
Who Makes Hinkle Carpet Stretchers?.....	63
Trade Report—	
Market Summary.....	64
Metal Market.....	64
The Pig Iron Market.....	65
Chicago Report.....	66
The Hardware Trade.....	66
Notes on Prices.....	66
Trade Notes.....	67
Metal and Miscellaneous Prices.....	68
Labor Exchange—	
Help and Situations Wanted.....	72

ROOFING SUPPLIES, METALS, TIN PLATES, &c.

REVISED JULY 24, 1902.

Aluminum—		
No. 1 Aluminum (guaranteed over 99% Pure), in ingots for remelting.		
Small lots.....	37¢	
100-lb lots.....	35¢	
Aluminum Sheet, B. & S. gauge.		
In lots of 50 lbs or more.		
Wider than.....	24-in.	30-in.
And including.....	14-in.	24-in.
Nos. 13 to 19.....		
" 20.....		
" 21 to 23.....		
" 24.....		
" 25.....		
" 26.....		
" 27.....		
" 28.....		
" 29.....		
" 30.....		
Note.—Lots of less than 50 lbs 5¢ per lb extra.		
Antimony—		
Cookson.....		
Hall's.....		
U. S.....		
Brass, Roll and Sheet.....		
Conductors—		
Corrugated.		
Round or Square.—		
Galvanized 1/2 or more, N'st'd.....		
Not Nested.....		
Plain Round, 1/2 or more.....		
Nested.....		
Galvanized, Plain Round, Not Nested.....		
Spiral Lock Seam Pipe—		
Galvanized.....		
Spiral Riveted.		
See also Elbows and Shoes; Eave Trough Mitres; Strainers, Conductor.		
Conductor Strainers—		
See Strainers, Conductor		
Copper—		
Lake Ingot.....		
Casting.....		
Sheet and Bolt.....		
Cold Rolled Sheets.....		
Cold Rolled and Polished Sheets.....		
Planished Sheets.....		
Bottoms, Pits and Flats.....		
Eave Trough Galvanized		
Territory.....		
Eastern.....		
Central.....		
Southern.....		
S. Western.....		
Terms, 2% for cash.		
Eave Trough Mitres—		
Lap or Slip Joint.....		
Elbows—Plain Adjustable—		
Eastern List.....		
Tin.....		
Galvanized.....		
Perfect Elbows.....		
Stove Pipe—		
Four-Piece		
No. 1.....		
No. 2.....		
No. 3.....		
Elbows and Shoes—		
Galvanized.....		
Gasoline—		
See Petroleum Products.		

Iron Sheet—Black.		
One Pass, C. R., R. G.		
Soft Steel, Cleaned.		
Nos. 14 to 10.....		
Nos. 18 to 21.....		
Nos. 22 to 24.....		
Nos. 25 and 26.....		
No. 27.....		
No. 28.....		
Russia, Planished, &c.		
Genuine Russia, accord-		
ing to assortment.....		
Do. Stained.....		
Patent Planished.....		
Galvanized.		
Nos. 14 and 16.....		
Nos. 18 and 20.....		
Nos. 22 and 24.....		
No. 26.....		
No. 27.....		
No. 28.....		
No. 30.....		
No. 20 and lighter, 36 inches wide, 25¢ higher.		
Lead—		
American Plg.....		
Bar.....		
Pipe.....		
Tin Lined Pipe.....		
Sheet Lead.....		
Old Lead in exchange, 35¢ per lb.		
Mitres Eave Trough—		
See Eave Trough Mitres.		
Nickel—		
Per lb.....		
Paints, Oils &c.—		
Leads—		
Lead, American White, in Oil:		
Lots of 500 lb or over.....		
Lots less than 500 lb.....		
Lead, White, in oil, 25 lb tin		
pails, add to keg price.....		
Lead, White, in oil, 12 1/2 lb tin		
pails, add to keg price.....		
Lead, White, in oil, 1 to 5 lb as-		
sorted tins, add to keg price.....		
Lead, White, Dry in bbls.....		
Lead, Red, bbls.....		
Lots 500 lb or over.....		
Lots less than 500 lb.....		
Oils—		
Linseed, City, raw.....		
Linseed, City, boiled.....		
Linseed State and West'n, raw.....		
Spirits Turpentine—		
In Southern bbls.....		
In machine bbls.....		
Putty—		
In bulk.....		
In bladders.....		
In cans 12 lb to 25 lb.....		
In cans 1 lb to 5 lb.....		
Petroleum Products—		
In Barrels (Barrel Included)		
Stove Gasoline.....		
Kerosene.....		
Pipe, Block Tin—		
Per lb.....		
Pipe Drain.....		
Pipe, Spiral—		
See Conductors.		

Registers—		
List Sept. 2, 1901.		
Back Japaned.....		
White Japaned.....		
Nickel Plated.....		
Bronze Finishes in Imitation of Gold.		
Silver, Copper or Bronze.....		
Electroplated in Brass, Bronze or		
Copper.....		
White Porcelain.....		
Solid Brass and Bronze Metal.....		
Roofing Material—		
1 Ply Tarred Paper.....		
2 Ply Tarred Paper.....		
3 Ply Tarred Paper.....		
Slater's Felt.....		
Roofing Pitch.....		
Rosin—		
Common and Good—Strained.		
Rosin, C. & D.....		
Rosin, E. & F.....		
Rosin, G. & H.....		
Rosin, I. & K.....		
Rosin, M. & N.....		
Shoes and Elbows—		
See Elbows and Shoes.		
Slate Roofing—		
f. o. b. oars, Quarry Station.		
According to size.		
Pennsylvania:		
Best Bangor, sq.....		
No. 1 Bangor Ribbon, sq.....		
Pen Argyle, sq.....		
Peach Bottom, sq.....		
No. 1 Chapman, sq.....		
No. 1 Penna. Black, sq.....		
Unfading Washington Ban-		
gor, sq.....		
Vermont:		
No. 1 Sea Green, sq.....		
Purple, sq.....		
Unfading Green, sq.....		
Red, sq.....		
Maine:		
Brownville, Unfading Black.		
No. 1, sq.....		
Solder—		
1/2 & 1/4 guaranteed.....		
No. 1, sq.....		
Prices of Solder indicated by private		
brands vary according to composition.		
Soldering Fluids—		
Per Pound.		
Concentrated Flux.....		
Eureka Flux.....		
Triple Strength.....		
Extra Concentrated.....		
Crystal.....		
Gedney's Fluid.....		
Lennox Fluid.....		
Perfection Flux.....		
Yager's Salts, 1 lb. bottles.....		
1 lb. bottles, per lb.....		
Soldering Coppers—		
Per lb.....		
Spelter—		
Western Spelter.....		
Spiral Pipe—		
See Conductors.		
Stove Pipe Elbows—		
See Elbows, Stove Pipe.		
Stove Trucks—		
See Trucks, Stove.		

Strainers, Conductor—		
Galvanize.....		
Tin Pigs and Bars—		
Banca, pigs.....		
Stralts, pigs.....		
Stralts, in bars.....		
Tin Plates American		
Charcoal Plates, Bright—		
N. B.—The price of 20 x 28 sizes		
double the price of 14 x 20.		
Calland Grade:		
IC, 14 x 20.....		
IX, 14 x 20.....		
IXX, 14 x 20.....		
IXXX, 14 x 20.....		
IXXXX, 14 x 20.....		
Melyn Grade:		
IC, 14 x 20.....		
IX, 14 x 20.....		
IXX, 14 x 20.....		
IXXX, 14 x 20.....		
IXXXX, 14 x 20.....		
Allaway Grade:		
IC, 14 x 20.....		
IX, 14 x 20.....		
IXX, 14 x 20.....		
IXXX, 14 x 20.....		
IXXXX, 14 x 20.....		
Coke Plates, Bright—		
Bessemer		
Steel, or		
equal to J. IC, 14 x 20.....		
B. Grade,		
full weight.....		
IX, 14 x 20.....		
N. B.—The reduction per box on lighter		
plates than IC, 14 x 20, is as follows:		
100 lb.....		
95 lb.....		
90 lb.....		
85 lb.....		
Terne Plates—		
N. B.—The following prices are for IC		
20 x 28, the rate for 14 x 20 being half as		
much. IX is usually held at \$2 per box		
advance for 8 to 10 lb coating and \$2.50		
to \$3 advance for 15 lb and upward.		
About 40 lb coating.....		
About 40 lb coating.....		
About 20 lb coating.....		
About 15 lb coating.....		
About 15 lb coating.....		
Boiler Plates, American—		
IXX, 14 x 26..(112 sheets).....		
IXX, 14 x 28..(112 sheets).....		
IXX, 14 x 31..(112 sheets).....		
Troughs Eave—		
See Eave Trough.		
Trucks, Stove—		
Improved Lock Frame, per doz.....		
Steel Lock Frame, per doz.....		
Daisy Improved pattern, doz.....		
Tubes and Tubing—		
Brazed Brass, List June 6, 1899.....		
Copper and Bronze, 3¢ per lb. list more		
than Brass.		
Seamless Brass Tubes, net list Feb. 6		
1899.....		
Tin.....		
Galvanized.....		
Fittings for do.....		
Zinc—		
600 lb casks.....		
Per lb.....		

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American Blower Co. 23	Cooney & Gelger. 75	Hanson & Van Winkle Co. 35	Montross Metal Shingle Co. 81	Smith & Anthony Co. 88
American Furnace Co. 73	Cope, Geo. W. 32	Harrington & King Perforating Co. 69	Morgan & Co. 36	Smith & Thayer Co. 22
American Galvanizing Wks. 77	Cortright Metal Roofing Co. 77	Hart & Cooley Co. 31	Mueller, L. J. F'ce Co. 22	Smith-Warren Co. 77
American Radiator Co. 23	Cory, Uzal & Co. 28	Hart & Crouse Co. 20	Mullins, W. H. 84	Somerset Stove Fdry. Co. 9
American Sheet Steel Co. 1&80	Cosby, C. H. 9	Hellos-Upton Co. 27	Munsell, E. & Co. 29	Sommer's, John Son. 1
American Steam Gage & Valve Mfg. Co. 1	Crosby Steam Gage & Valve Co. 1	Hessler, H. E. Co. 33	National Enameling & Stamping Co. 38	Special Notices. 72
American Steel Roofing Co. 78	Curtis & Curtis Co. 37	Hoffman, Geo. W. 32	National Pipe Bending Co. 26	Sperry, D. R. & Co. 75
American Tin Plate Co. 80	Dangler Stove & Mfg. Co. 8	Howes, S. M. Co. 34	New York Iron Roofing & Corrugating Co. 78	Stamford Foundry Co. 26
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Auld & Conger Co. 76	Dixon, Jos. Crucible Co. 77	International Correspondence Schools. 73	O'Halloran & Jacobs. 76	Stocking, E. B. 74
Baker, L. B. Mfg. Co. 29	Double Truss Cornice Brake Co. 84	International Heater Co. 3	Ohio Mica Co. 35	Stolz, Frank D. 25
Barstow Stove Co. 88	Drake, W. H. 26	Irwin, H. L. 73	Ohio Stove Co. 7	Stover Mfg. Co. 34
Beckwith, P. D., Est. of. 2	Dreis, Andrews & Krump. 87	Janney, Steinmetz & Co. 78	Ohl, Geo. A. & Co. 86	Stowell Mfg. Co. 84
Berger Bros. Co. 78	Drouve, G. Co. 85	Jenkins Bros. 1	Osborn, J. M. & L. A. 81	Swaine, F. J. Co. 86
Berger Mfg. Co. 82	Edwards, J. H. 35	Joliet Stove Works. 4	Ostrander, W. R. & Co. 83	Sweet, A. L. Iron Works. 25
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Bertsch & Co. 86	Ellers, J. H. & Co. 83	Keene, Geo. C. & Co. 87	Peck, Stow & Wilcox Co. 85	Toledo Mch. & Tool Co. 84
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Dighton Furnace Co., Taunton, Mass.
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Metropolis Sheet Metals & Stove Repairing Co., Newark, N. J.
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McClure & Co., Pittsburgh, Pa.
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- Water Closets.**
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Colwell Lead Co., 63 Centre St., N. Y.
- Water Fronts.**
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- Water Heaters.**
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- Wind Gates.**
Miner & Peck Mfg. Co., New Haven, Ct.
- Window Frames, Metal.**
Smith-Warren Co., Boston, Mass.

SEE ALPHABETICAL INDEX, PAGE 69.

THE METAL WORKER.

With which is Incorporated The Stove and Tin Trade Journal, The Sheet Metal Builder, and Metal.

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Notices under this heading of reasonable length are inserted free of charge. Only those relating to employment are admitted. Write distinctly on one side of paper only, and do not use postal cards.

Original letters of reference should not be inclosed with replies to advertisements appearing in these columns as they are frequently mislaid and lost. A copy of the reference will serve the purpose.

HELP WANTED.

A first-class all around TINSMITH; eight hours work. Shurter & Briggs, 268 Main street, Poughkeepsie, N. Y. July 26

TINNER; one that is good on general jobbing; state wages. "C." P. O. Box 447, Seymour, Conn. July 26

Three good men who thoroughly understand installing of hot air furnaces; good wages to good men. Moncrief Furnace & Foundry Company, Atlanta, Ga. July 26

TINSMITH, experienced at roofing. Address, stating experience and wages wanted. J. H. Brown, 372 North street, Rochester, N. Y. July 26

CORNICE MAKER to do cutting and take charge of six or eight men; near New York City. "H. H.," care *The Metal Worker*, New York. July 26

Two CORNICE MAKERS and three TIN and SHEET IRON WORKERS. Apply at the Newburgh Cornice Works, Newburgh, N. Y. July 26

At once, a sober and reliable TINNER; one that can clerk in store when needed; give references. Reynolds & Lemon, Berrien Springs, Mich. July 26

At once, good all around TINNER with some knowledge of furnace work; steady job to the right man. J. H. Lane, Jonesboro, Ark. July 26

TINNER to do cutting and riveting. Kayser & Danz Mfg. Company, Green Bay, Wis. July 26

FOREMAN for room devoted to making high grade pieced tinware in tinware factory; desirable situation may be had. "Desirable," care *The Metal Worker*, New York. July 26

WORKING FOREMAN in a cornice, tin roofing, &c. shop, who has charge of men; must be at least 35 years old and good experience. The Mitchell Roofing Company, Third and B streets, S. W., or W. H. O'Connor, 222 Third street, N. W., Washington, D. C. July 26

A live young man; one that has had some experience in selling stoves, ranges and heaters; reference required. South Erie Iron Works, Erie, Pa. July 26

Two first-class BLOW PIPE MEN can find steady work by applying at Savannah Blow Pipe Works, Savannah, Ga. July 26

Two first-class PLUMBERS; steady work year round; must be good lead workers and sober; none others need apply. Chas. L. Titus, Uniontown, Pa. July 26

A good TINSMITH who can do plumbing. Geo. A. Antoline, Biddeford, Maine. July 26

Experienced man to run CORNICE BRAKE; permanent position. "Cornice," care *The Metal Worker*, 117-119 South Fourth street, Philadelphia, Pa. July 26

DRUMMER, at once, for cornice business. M. S. A. Wilson, 408-410 East Seventy-seventh street, New York. July 26

First-class TINNER; one who understands slating; can do all kinds of sheet iron work; must be sober and industrious; steady work. St. Clair-Griffith Company, Scottsdale, Pa. July 26

First-class TINSMITH and FURNACEMAN; one who has some experience in blow piping. A. G. Brooks & Son, Green Bay, Wis. July 26

STEAMFITTER for steady work in fine residences; quick, neat and clean, who can erect water jobs in two days per radiator without constant supervision; \$2.75 per day of nine hours; state age and present employer; no one unemployed will be considered. "Phila." care *The Metal Worker*, 117-119 South Fourth street, Philadelphia, Pa. July 26

Man that can cut and make cornice from plans; good job for right kind of man; some knowledge of furnace work is desirable. W. N. Johnson, 533 Main street, Richmond, Ind. July 26

Two first-class stove follow-boards; steady work and good pay to right parties. H. Wetter Mfg. Company, South Pittsburg, Tenn. July 26

To correspond with a SALESMAN who can carry a side line of warm air registers to advantage. "Anxious," care *The Metal Worker*, New York. July 26

Man able to take charge of piece ware factory; must be sober and industrious; main goods to be manufactured will be wash boilers; references. Puget Sound Sheet Metal Works, 1318-20-22 Western avenue, Seattle, Wash. July 26

TINNER and FURNACEMAN; state experience and wages wanted. J. F. Stephenson, Lakewood, N. J. July 26

A good all around TINSMITH. Alfred Martin & Co., 312 and 314 Market street, Rockford, Ill. July 26

Experienced TINNER and FURNACEMAN; steady position to right man. Scheilhammer & Son, 323 Water street, Warren, Pa. July 19

At once, good all around TINNER; good wages to steady man; give experience, age, &c. M. R. O'Neill, hardware, 67 Broadway, Fargo, N. D. July 19

First-class CORNICE MAKERS and ROOFERS at New Haven. The Springfield Cornice Works, Springfield, Mass. July 19

One first-class PLUMBER; must be capable of laying out and executing all jobs in plumbing, steam and hot water heating; good on old work; none but capable man need apply. W. H. Stoye, Huntington, N. Y. July 19

First-class ESTIMATOR and SOLICITOR on metal work, cornices, &c. can obtain good position, large shop, if competent; send references, salary, &c. "First-Class," care *The Metal Worker*, New York. July 19

Good PLUMBER at once with fair knowledge of tin and sheet iron work can secure permanent position at fair remuneration with live firm in bustling Maine town, if can give satisfactory references. "Knowledge," care *The Metal Worker*, New York. July 19

At once, a good SANITARY PLUMBER, sober and industrious; good wages; pretty village. Box 135, Port Henry, N. Y. July 19

A number of first-class PATTERN MAKERS; steady positions offered to good men and the best of wages paid. Richmond Pattern Works, Richmond, Va. July 19

A thoroughly competent man to take charge of making galvanized ware in a large Western factory; state age, experience and salary expected. "Factory," care *The Metal Worker*, New York. July 19

A clerk in a stove store; must understand stove work thoroughly; a German preferred. "S." care *The Metal Worker*, New York. July 19

At once, a first-class STOVE PATTERN FITTER; one who thoroughly understands his business; state experience and wages wanted. Keystone Stove Foundry, Spring City, Pa. July 19

First-class inside CORNICE MEN; soldering and cutting out work. David Lupton's Sons' Company, Allegheny avenue and Tulip street, Philadelphia, Pa. July 19

SITUATIONS WANTED.

Steady position as PATTERN FILER and FITTER; thoroughly acquainted with stove patterns and all kinds of small gating work in brass or metal; can give first-class reference. Samuel W. Bailey, 924 Barr street, Cincinnati, Ohio. July 26

TINSMITH, ROOFER and FURNACE WORKER; understands plumbing and pipe fitting; age 29; steady and competent. "Shalman," care Vogler, 216 West Eighty-fourth street, New York. July 26

PLUMBER; first-class; in country; \$2.50 per day; understands steam fitting and roofing. Geo. Schnelder, 537 East Eighty-eighth street, New York. July 26

As FOREMAN or MANAGER, by a first-class plumber, steam and hot water fitter; 18 years' experience; have successfully solicited, estimated, designed and executed all manner of plumbing, steam and hot water heating; married; best of references. "R. R.," care *The Metal Worker*, New York. July 26

By a good, reliable PLUMBER; steam, hot water and hot air heating; 25 years' experience; a steady job in country shop or small city; wages reasonable; references. "B. C.," Box 234, Margaretville, Delaware County, N. Y. July 26

Young man, 23 years old, desires position with an up to date plumbing establishment as PLUMBER and STEAM FITTER'S HELPER; three years' experience; can read and work from heating plans and render excellent service on plumbing; reference if desired. "Render," care *The Metal Worker*, New York. July 26

By a young man; 12 years' experience at plumbing and tinning; license for Massachusetts. L. Hemming, Springfield, Mass. July 26

By a TIN and SHEET IRON WORKER. Charles B. Garrison, Atlantic City, N. J. July 26

By a first-class, sober, reliable PLUMBER, STEAM and HOT WATER FITTER, capable of taking charge of shop; references. "E.," Central and Elm streets, Gardiner, Maine. July 26

TINSMITH and ROOFER; understands in and outside work. B. Marcus, 55 Forsyth street, New York. July 26

By PLUMBER in country. Geo. Conlin, 499 West 124th street (rear), New York. July 26

As FOREMAN, JAPANNER and STRIPER on tinware, or lithographic tin plate decorator in all its branches for cans, seamless boxes, &c.; 23 years' practical experience. Daniel F. Calahan, 71 Schaeffer street, Brooklyn, N. Y. July 26

By a first-class CORNICE and SKYLIGHT MAKER for in and outside work; can do draining and cutting. Rob. Reinholz, 33 Cedar street, Fitchburg, Mass. July 26

A young man, strictly temperate, honest and reliable, would like a steady position at plumbing, steam or gas fitting; union man. Robert S. Gregory, Cranbury, Conn. July 26

By young man, steady, sober and honest, who has had 5½ years' experience at plumbing in a country shop. Theo. T. Livsey, 2 New Fenner avenue, Arlington, R. I. July 26

As HARDWARE CLERK by a young man, robust, not afraid of work; has a good business education; desires to learn the business; Michigan preferred. R. E. Finucane, 405 South Stewart avenue, Big Rapids, Mich. July 26

Good PLUMBER wants a situation; will work reasonable. W. Leo, Portland, Ind. July 26

Opening with some foundry; can render good service either practically or commercially; have had 13 years' experience and know the requirements of either branch of the business; can recommend or obtain faithful men for any department; am 32 years of age, possess good executive ability and able to handle men. "H. P. No. 2," care *The Metal Worker*, New York. July 26

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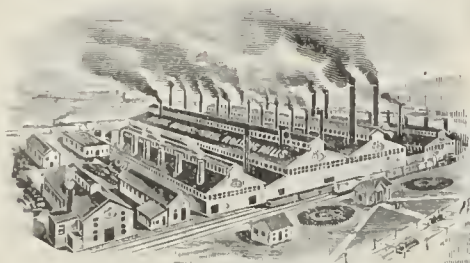
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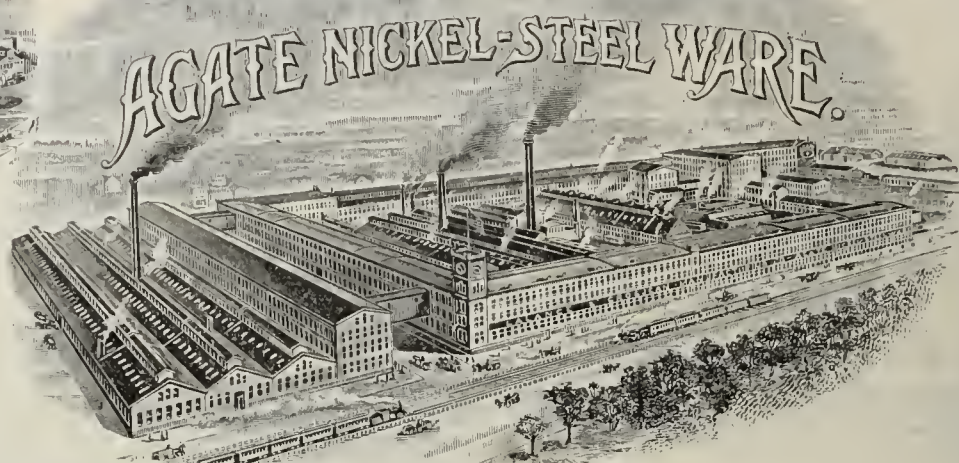
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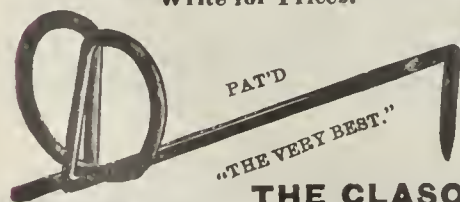
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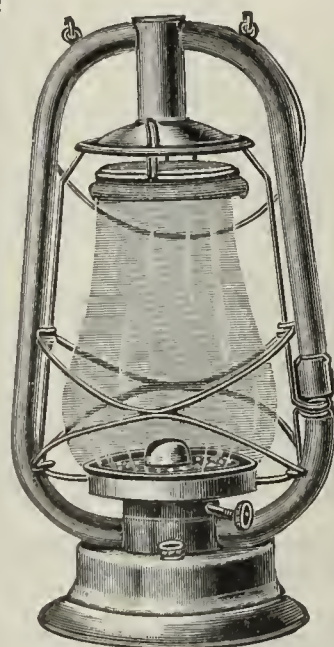
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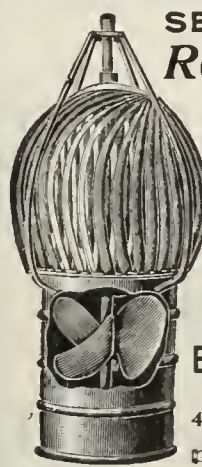
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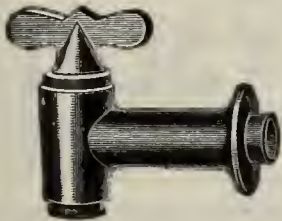
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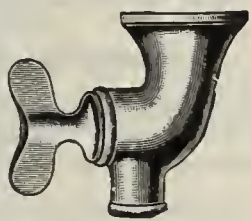
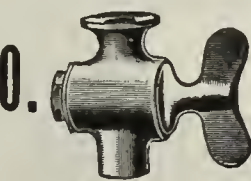
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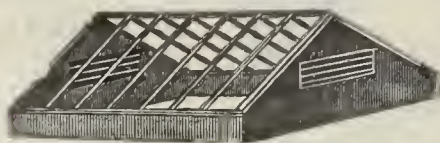
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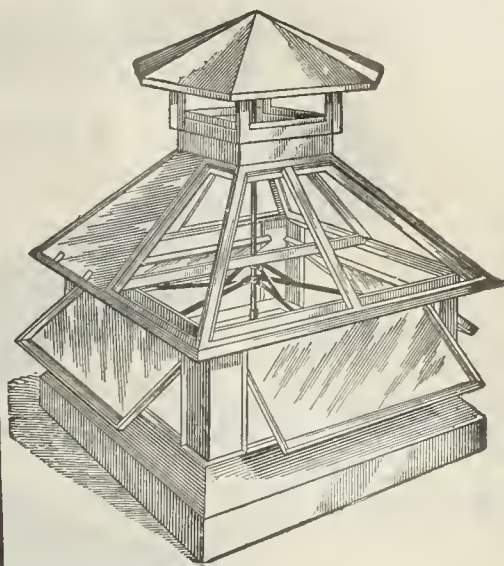
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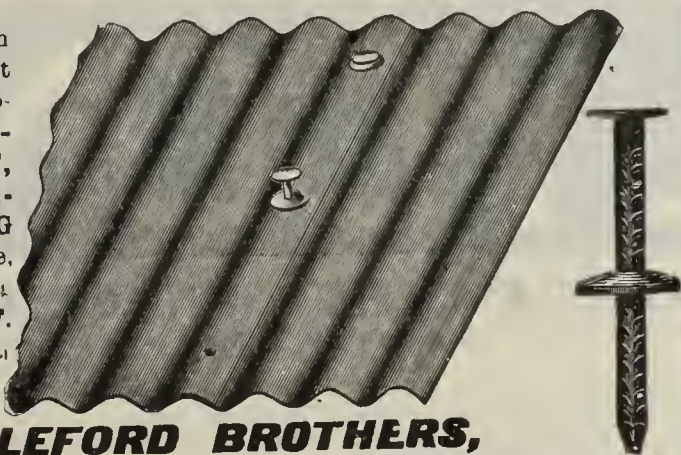
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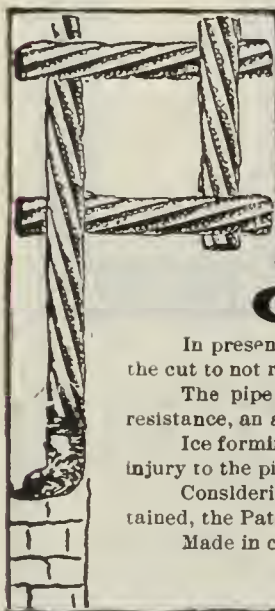
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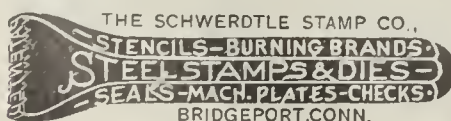
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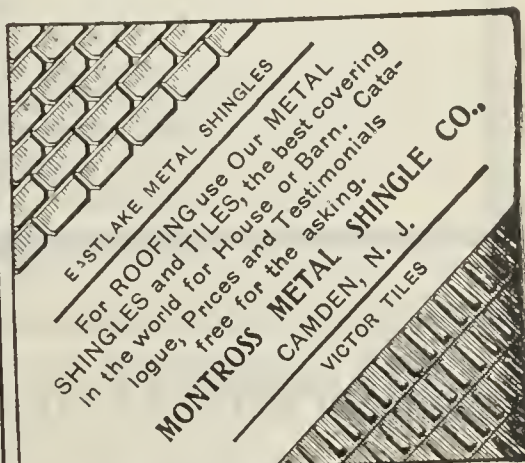
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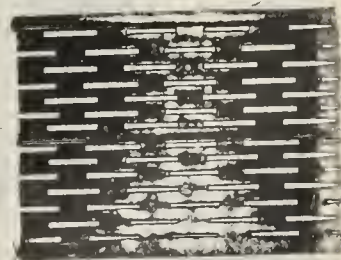
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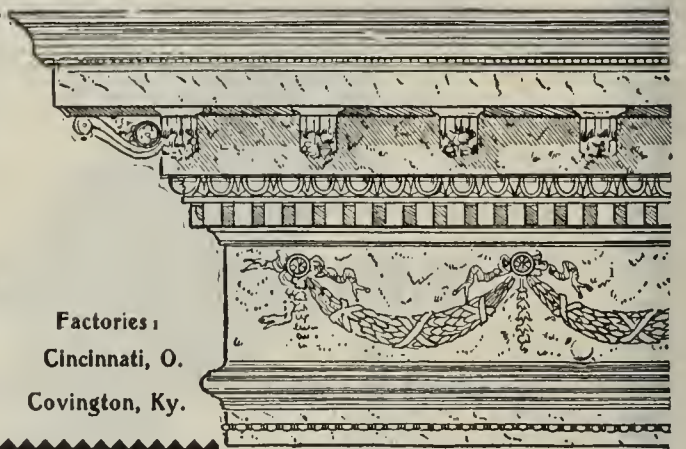
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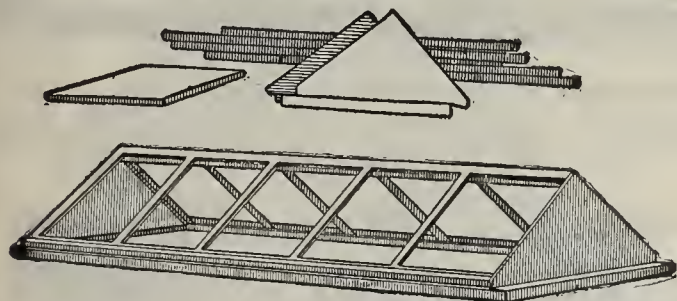
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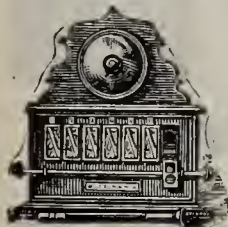
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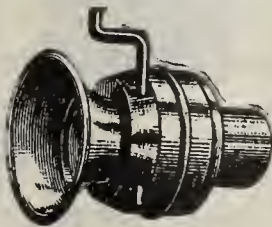
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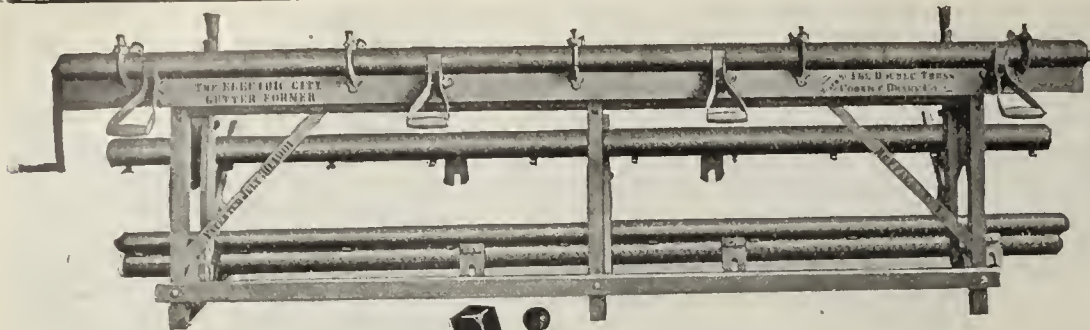
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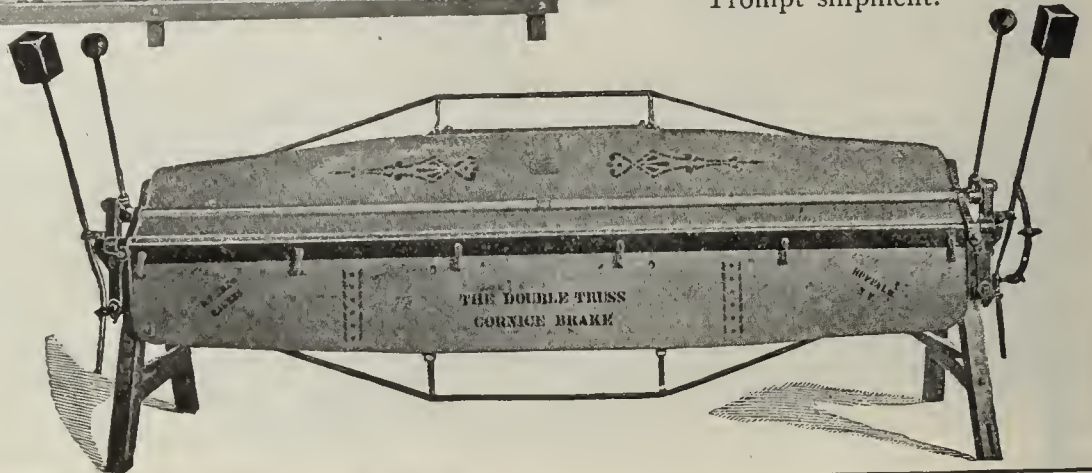


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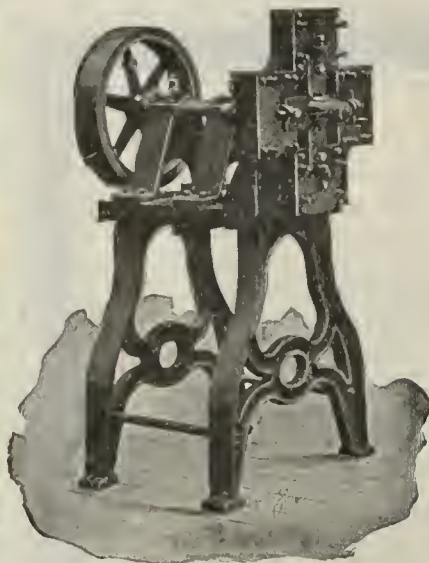
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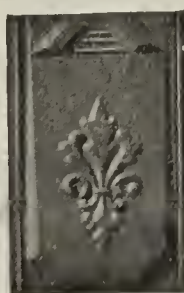
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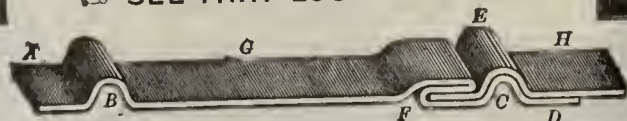
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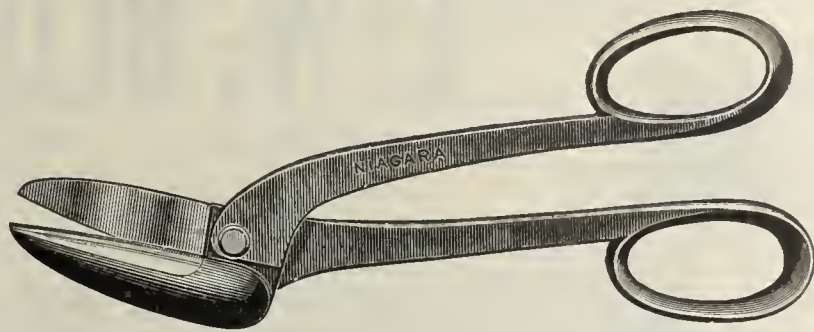
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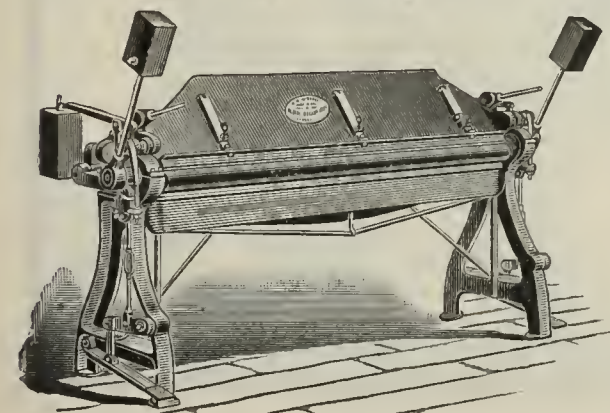


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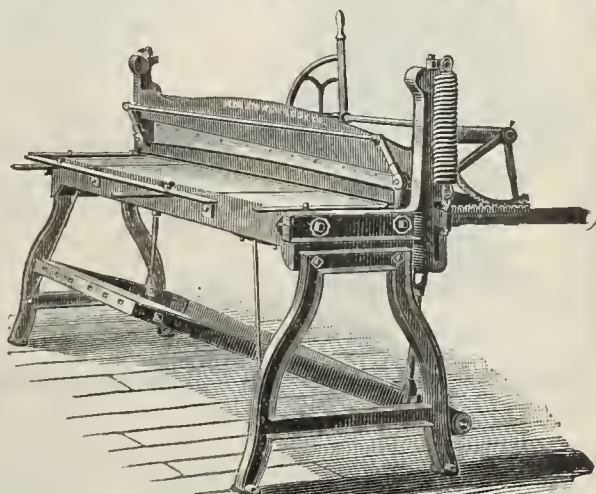
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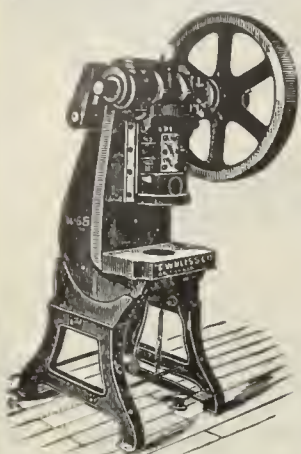


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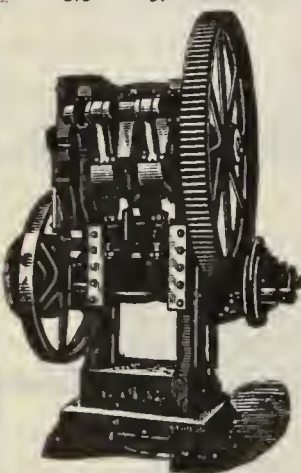


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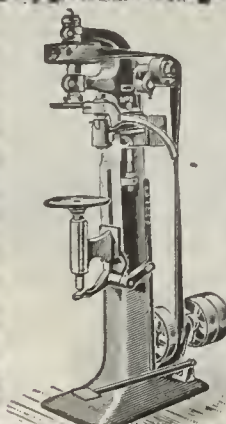
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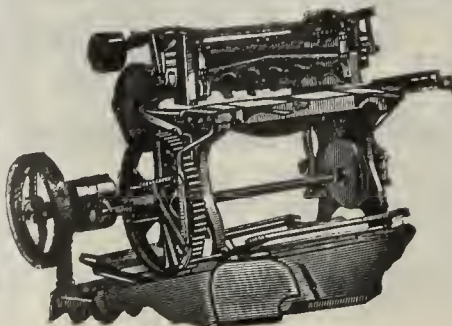
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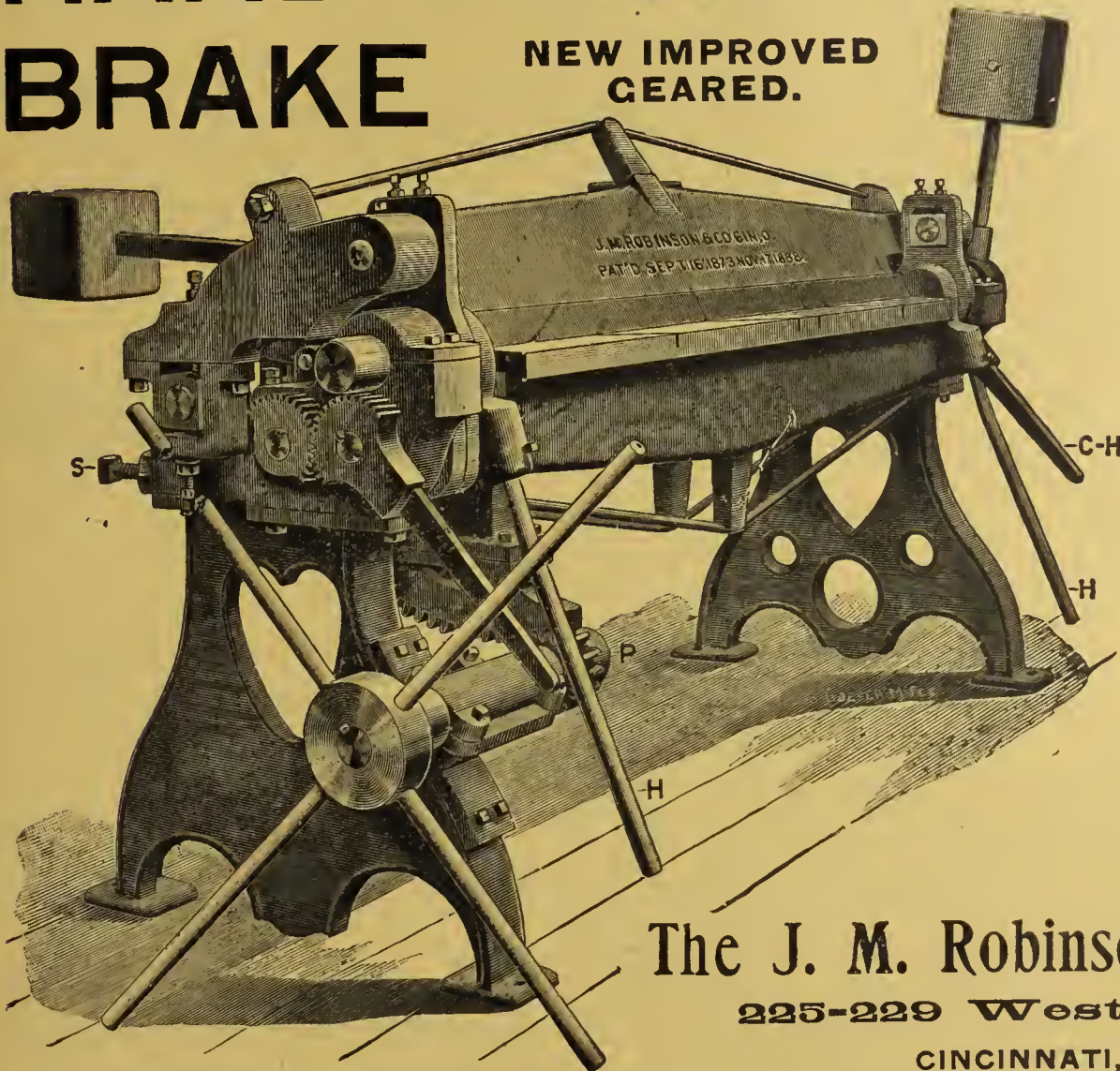
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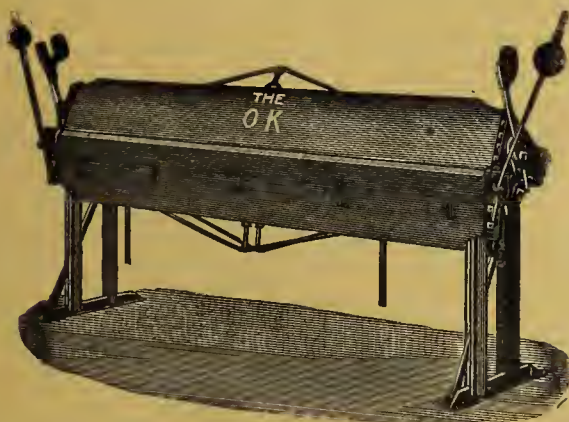
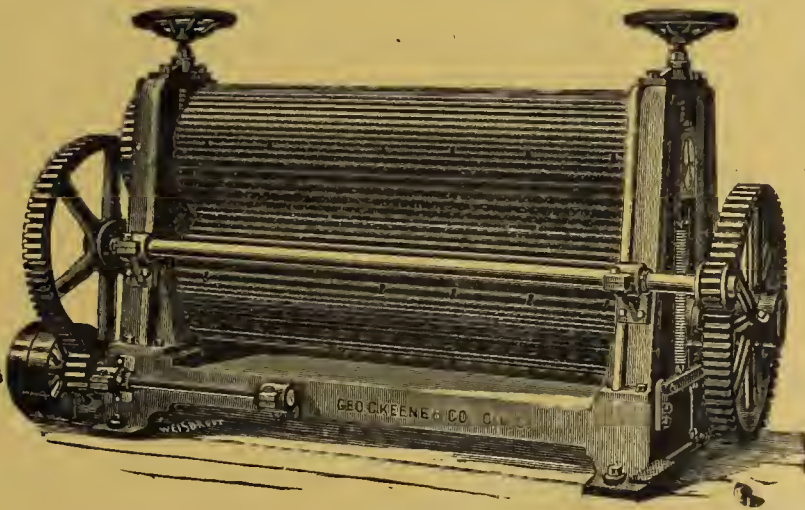
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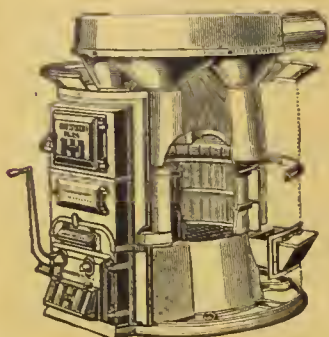
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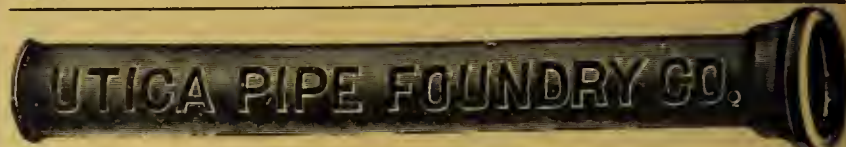
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Accept our thanks for same
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on its beauty, elegance and
neatness.
It is the finest
stove catalogue
we have yet seen
and why shouldn't it be
when we consider
what it represents.
It is in
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with the goods.

Yours truly,
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Would you like
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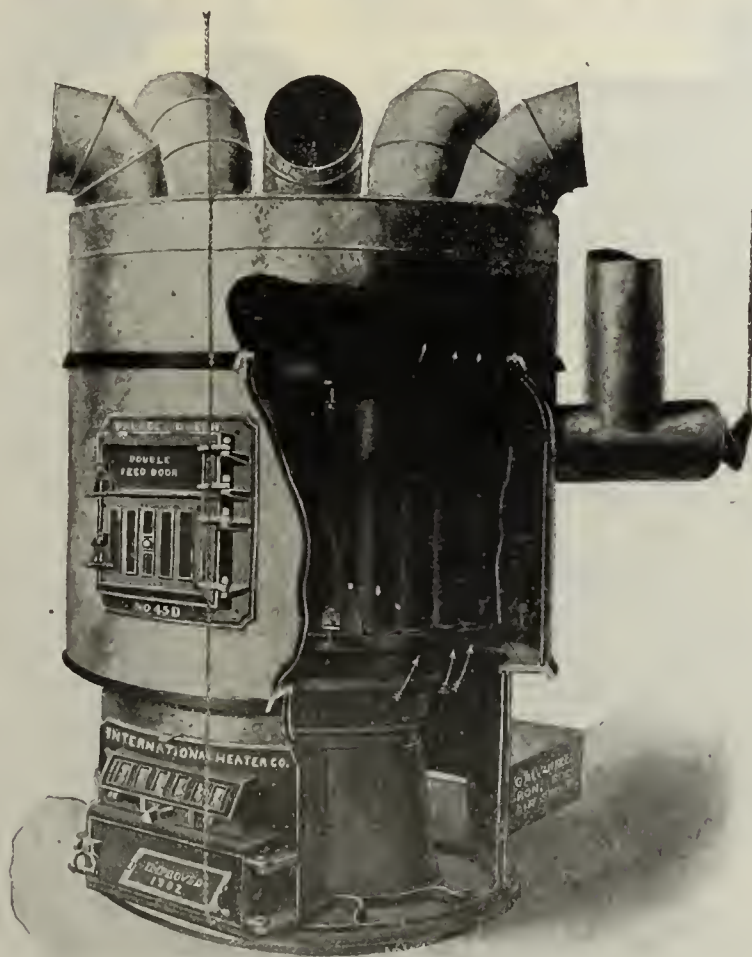
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With Double Feed Doors, one or both of which may be used as desired.



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HAVE EITHER A RIGHT-HAND RESERVOIR

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The Reservoirs used on the "Quick Meal" Steel Ranges are so arranged that they can be attached to the body of the Range without interfering in any way with either the draft or the baking of the Range. The pocket of the left-hand Reservoir projects through the left wall of the Range and fits flush with the inside of the left wall of the fire-box. The pockets of the right-hand Reservoir project through the right wall and a short way into the down flue of the Range. There are no dampers to confuse the operator or interfere with the draft of the Range. They have an outside casing, nicely japanned, which protects the Reservoir and prevents sweating.

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Catalogues are free.

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Price is Right.



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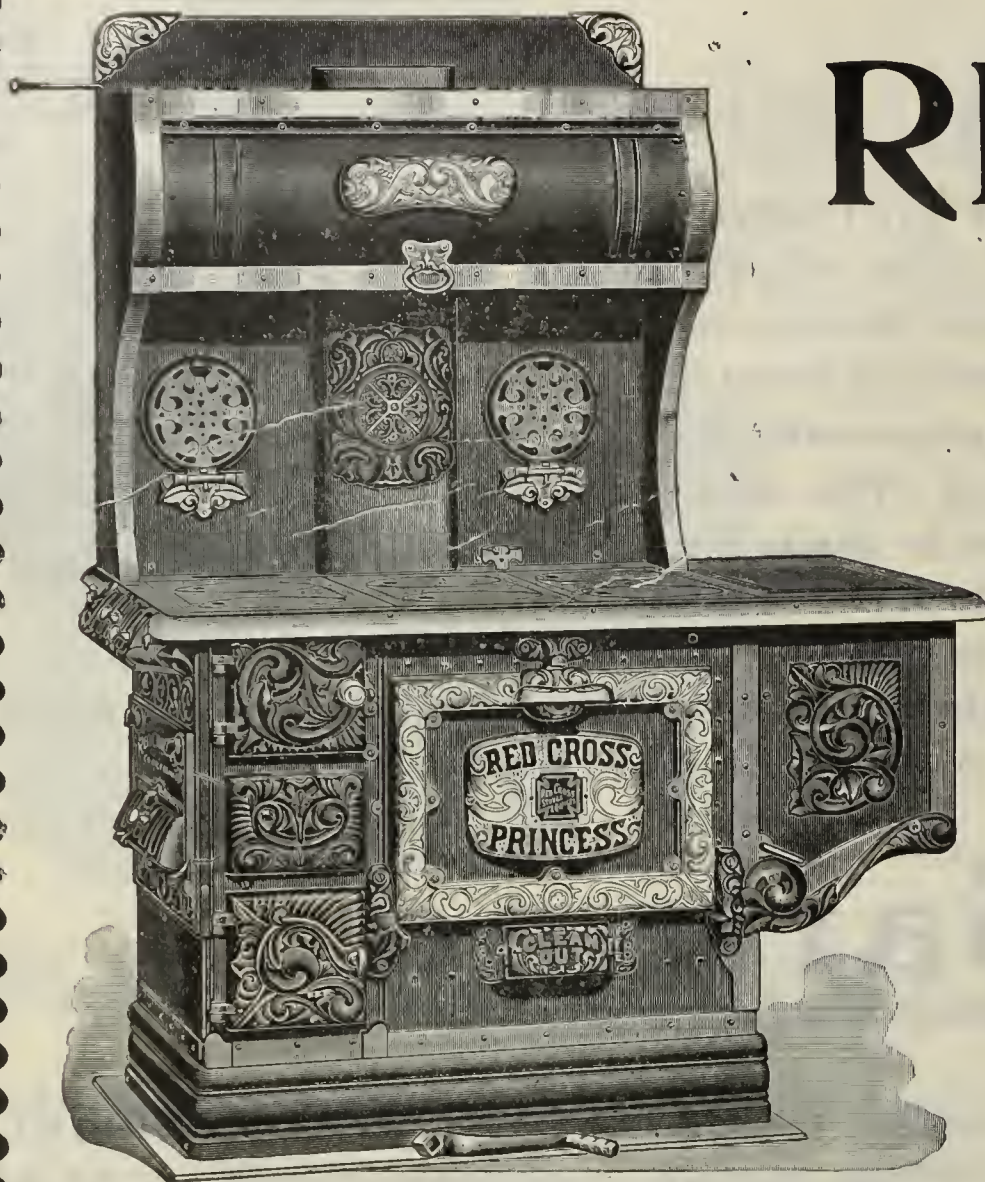
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Every stove a Double
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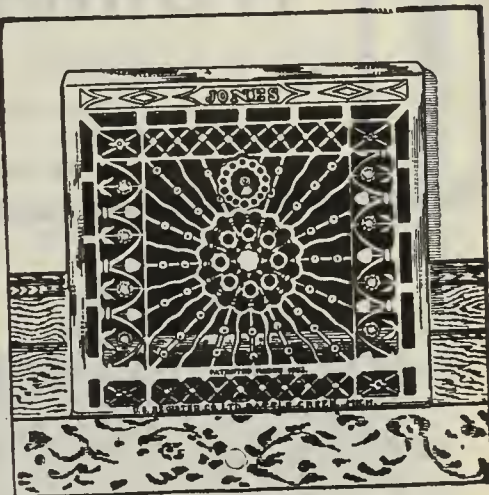
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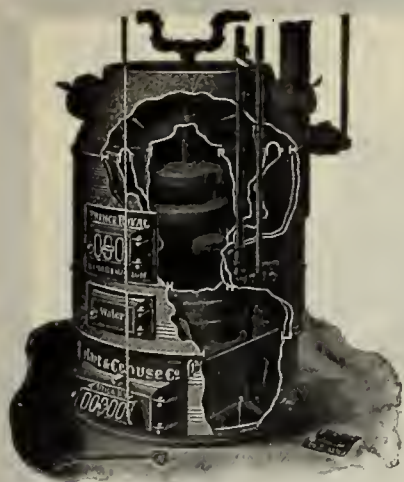


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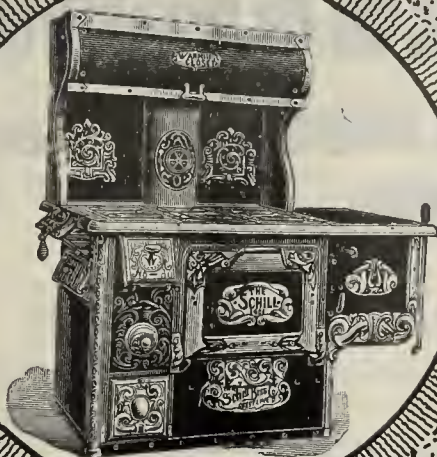
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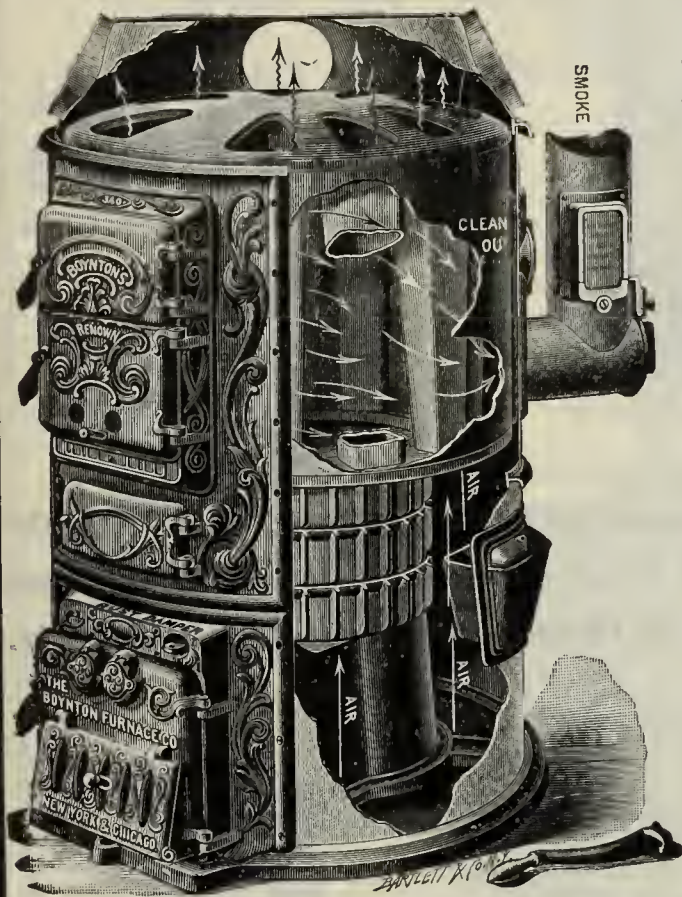
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BOYNTON'S "RENOWN" PORTABLE FURNACE



A new and distinct type of construction thoroughly tried and tested. Possessing more area of heating surface to area of grate surface than any other furnace manufactured.

Notice construction of cast iron heating flues, each one directly over and in contact with fire. Can we mail you catalogue and prices?

The **BOYNTON FURNACE CO.,**
NEW YORK. CHICAGO.



IF YOU ARE NOT SELLING THE

Peck-Williamson Underfeed Furnace

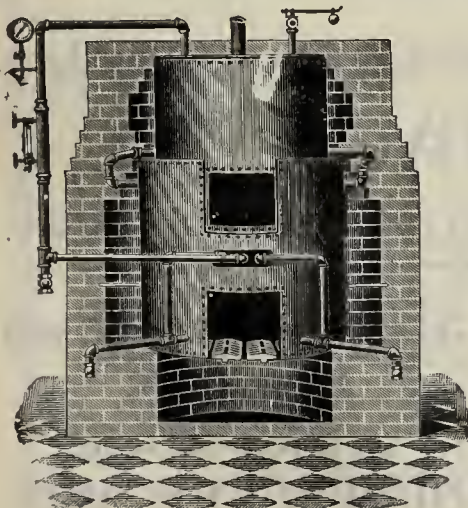
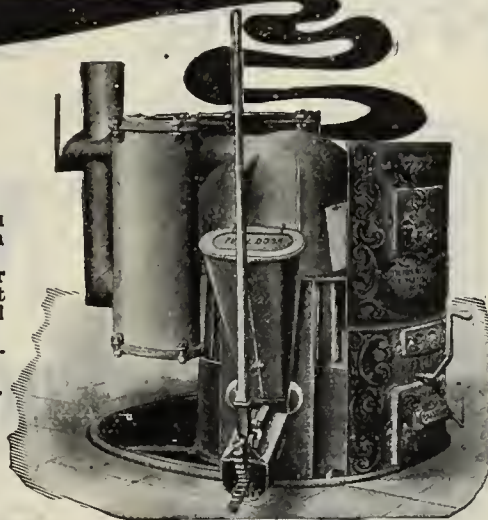
you have not the trade and are not making the money you might. Just a pull or two of the lever feeds the new coal from underneath.

The Underfeed Furnace consumes less fuel than any other furnace ever built. The coal is burnt more slowly. All the heat units from it, as well as from the smoke, are utilized and all smoke eliminated.

Our handsome booklet explains its splendid heating qualities and coal saving.

You may have this booklet and our special plans for selling. Ask for booklet about our Laundry Dryer also.

THE PECK-WILLIAMSON COMPANY,
CINCINNATI, OHIO.



THE Kewanee

A Steel Brick-Set Boiler for Steam and Water
Heating—Hard or Soft Coal.

HAS AN ESTABLISHED REPUTATION.

SOLD ON MERIT.

PRICES TO THE TRADE ONLY.

KEWANEE BOILER COMPANY

Chicago Store, 169 E. Lake St.

KEWANEE, ILL.

Eastern Representatives:

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Philadelphia, Pa.
New York, N. Y.
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UTICA



HEATERS

This line of heaters is made in six sizes, ranging in capacity from 6,000 to 50,000 cu. ft., with firepots from 18 to 28 inches. Our furnace catalogue describes this line in detail,—as well as our 13 other styles of warm air furnaces and heaters. Send for it.

We also make a complete line of steam and hot water boilers and radiation.

UTICA HEATER COMPANY,

General Offices,
UTICA, N. Y.

NEW YORK CITY,
106-108 Beekman Street.

CHICAGO,
33 Dearborn St.

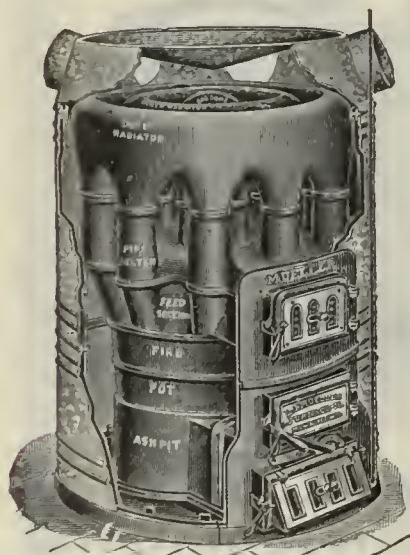
BOSTON,
24 India Square.

NONE CAN COMPARE

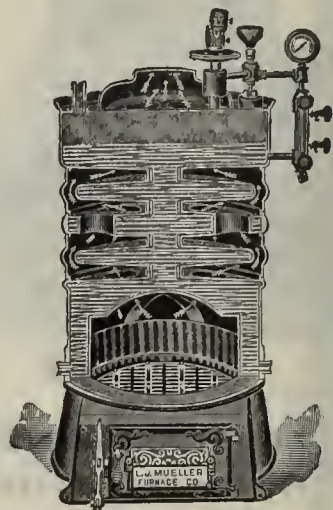
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MUELLER

Furnaces and Boilers.



All Cast Iron Double Radiator.



Sold On Their Merits.

Heaters in all styles. For all kinds of fuel.

WRITE FOR CATALOGUE AND PRICES.

Established 1857

Everything in the Heating Line.

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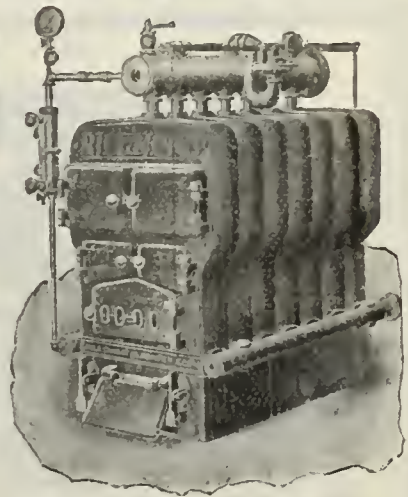
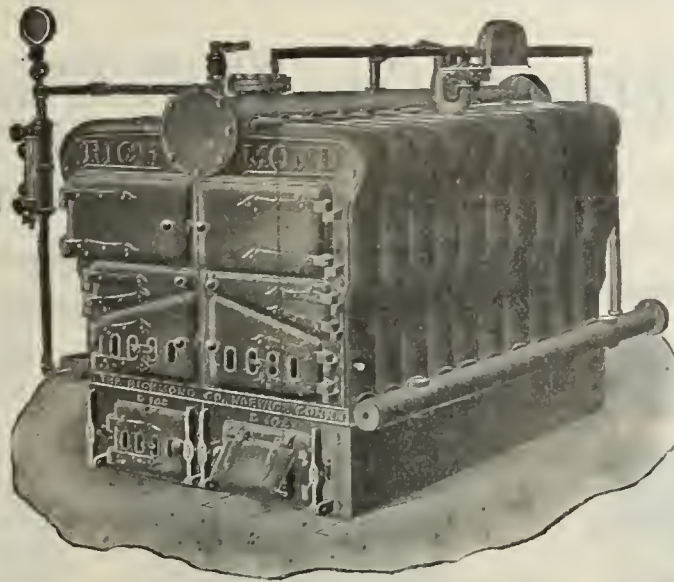
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STOVES, RANGES and
FURNACES.

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THE season is now approaching when you will be *too busy* to consider the fine points of distinction between one boiler and another.



Why should you postpone another day informing yourself fully about the good points of

RICHMOND BOILERS

SEND FOR OUR NEW **1902** CATALOGUE. DON'T FORGET
TO ASK FOR PRICES ALSO.

THE RICHMOND COMPANY, NORWICH,
CONN.

NEW YORK, PHILADELPHIA, PITTSBURGH, CHICAGO, ST. LOUIS,
738 Park Row Bldg. 18-24 So. 7th St. 210 Ferguson Bldg. Chicago Heater & Supply Co., Rumsey & Sikemeier Co.

Established 1850.

Reasons Why You Should Sell "Thatcher" Furnaces

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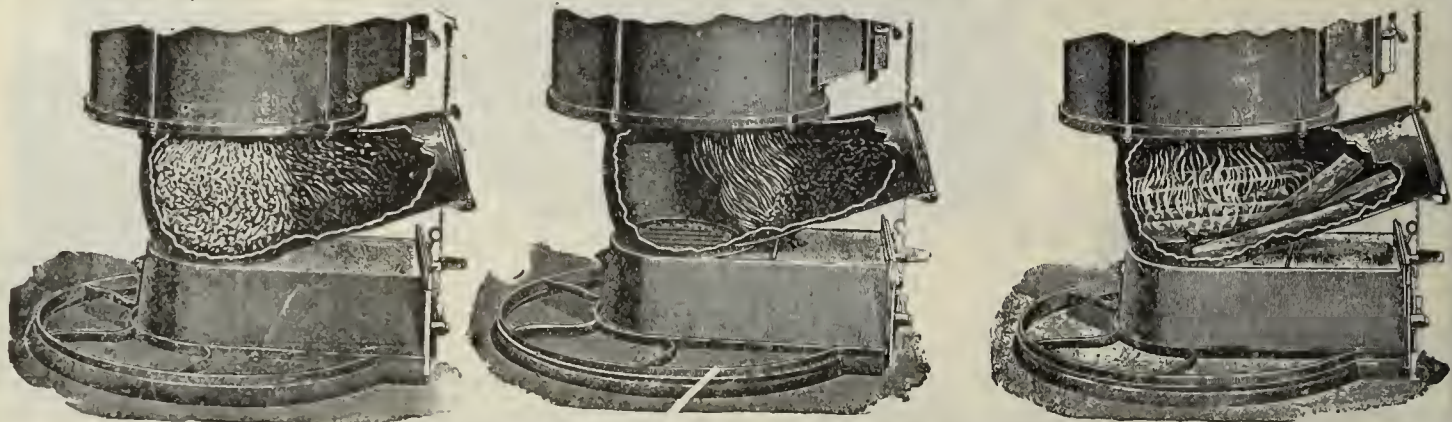
THEY ARE SOLD ONLY THROUGH THE TRADE.
 THEY SELL READILY.
 THEY HAVE AN ESTABLISHED REPUTATION.
 THEY SAVE COAL.
 THEY ARE MADE IN A LARGE VARIETY OF STYLES.

PRICES ARE RIGHT.SEND FOR CATALOG.**Thatcher Furnace Co.**

WARM AIR FURNACES,
 RANGES, STEAM AND
 HOT WATER HEATERS

Works: Newark, N. J.

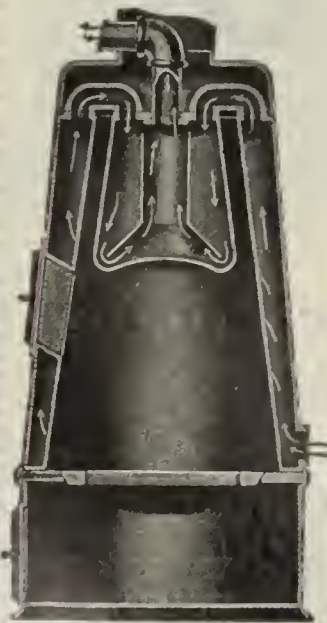
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**THREE PRACTICAL USES**

to which the *Combination Fire Bowl* and *Coking Magazine* used on the **PATRIC FURNACE** may be put.

The first cut shows soft coal undergoing coking process in magazine, with coked coal in main bowl. *A great fuel saver.* Second cut illustrates fire carried only in magazine, for light Spring and Fall heating, *a great convenience.* Third illustration shows furnace used for wood. *A success for twenty years.*

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One of the Davis Heaters.

The "DAVIS" HOT WATER HEATER.**Best Domestic Water Heater.**

Heats water for a bath to 150° in eight minutes.
 Davis Steam and Hot Water Heaters are made in several sizes, and for heating buildings of every description.

 Write for new Catalog and Particulars.

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DAVIS HEATER CO. Racine, Wis.



You Must Win Out.

The department stores win out because they cater to all classes of trade. You may do the same thing with

"GURNEY" HEATERS, BRIGHT IDEA, DORIC and 400 SERIES,

For heating large buildings, halls, etc., we furnish "Bright Idea." For heating smaller buildings, residences, greenhouses, etc., "400 Series," and for dwellings, "Doric" Heaters. Thus you don't have to pass by any want. You can bid on them all—and successfully, too, because "Gurney" Heaters **will accomplish more at less cost than any heater made.** Based on actual value, it's easily the cheapest one in the market. Catering to all classes of heating wants

and possessing these marked excellences, you must win with a "Gurney" agency. Write for full particulars and latest catalogue.

Gurney Heater Mfg. Co.,

74 Franklin St., Boston.

111 Fifth Ave., New York City.

Western Selling Agents, James B. Clow & Sons, 358 Franklin St., Chicago, Ill.

COAL

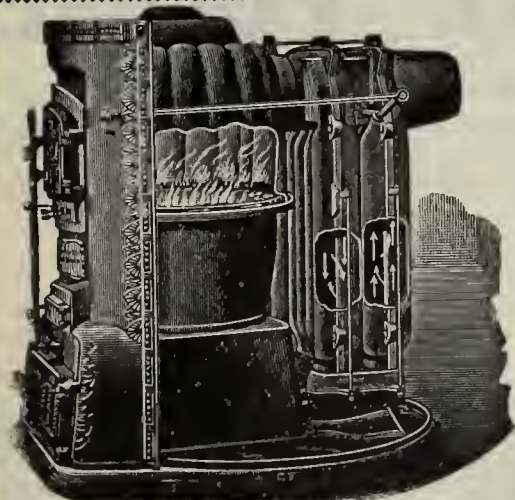
will be dear, no doubt, this winter. If you use a **BENGAL FURNACE** you need not worry, because your coal bills will be no bigger than when you used the other furnace and coal was cheap.

THE RADIATOR DOES IT.

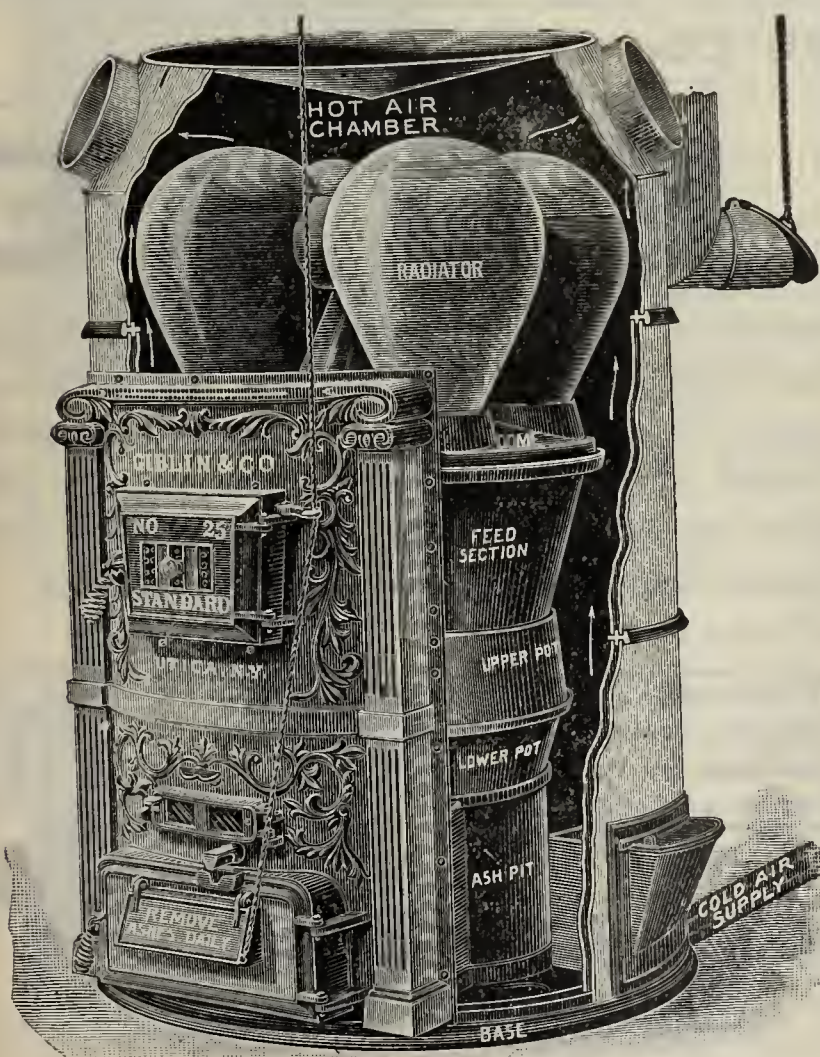
Write for particulars.

FLOYD, WELLS & CO., Royersford, Pa.

NEW YORK OFFICE, 210 WATER ST., R. W. HILLMAN, Manager.



Eastern Selling Agents:
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Washington, Hanover and Elm Streets, Boston, Mass.



SECURING HEAT

without gas, smoke, or dust can be easily accomplished where the

Standard Furnace

is used. Observe construction of radiator. Four Domes and connection are made all in one casting with no joints whatever.

The form of this casting secures enormous

Radiating Surface

and the retention of the heated air. Eighteen years' experience has thoroughly demonstrated the efficiency of this

All Cast Iron furnace

Dealers have continued to sell it for each of the 18 years with constantly increasing sales.

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Catalog and Prices.

GIBLIN & CO.,
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The New WALKER BOILER for Steam:for Water

These boilers are made in 21 sizes for Steam and 21 sizes for Water, with heating capacities to suit almost any requirement. Every boiler sold is giving perfect satisfaction. Our "HONEST RATING" plan is popular. What's the use of saying that a 600-foot boiler will carry 1000 feet? The boiler refuses to recognize your table of capacities.

Honest ratings and fair prices are matters of interest to everyone. Will be pleased to send catalogue and discounts. Correspondence and inspection invited.

WALKER & PRATT MFG. CO.,

31-35 UNION ST., BOSTON, MASS.

"Finest Factory in this line in the world."



WALKER BOILER.



THE "Dighton Oak" Furnace

Dimensions and List Prices:

No. of Furnace.	Diameter of Fire Pot.	Height of Castings.	Diameter of Casings.	List Price of Castings.	List Price of Casings.	List Price of Wood Grates.
190	20 inches	51 inches	36 inches	\$ 48 00	\$ 8 00	\$1 68
210	22 "	53 "	39 "	56 00	9 00	2 08
230	24 "	51 "	42 "	68 00	11 50	3 36
250	26 "	53 "	46 "	78 00	14 00	4 17
282	29 "	60 "	52 "	110 00	17 00	6 67
310	31 "	62 "	52 "	135 00	17 00	7 50

The "DIGHTON OAK" is made especially for burning wood, but is as well suited for coal, coke or gas for fuel. The general type of construction is exactly the same as the regular "DIGHTON" which has become so well-known as a durable and economical heater. The outside measurements, flue construction and flue measurements are the same; the large double feed doors allow of taking in large chunks of wood or a 4-foot stick cut once. The wood grate is not fastened to the fire pot or coal grates; it rests upon the triangular grate bars, and by easily turning these bars the fire is thoroughly cleaned. If at any time it may be desirable to use coal instead of wood as fuel, this grate can be removed in a minute's time through the feed door and set aside until such time as you wish to change to burning wood again.

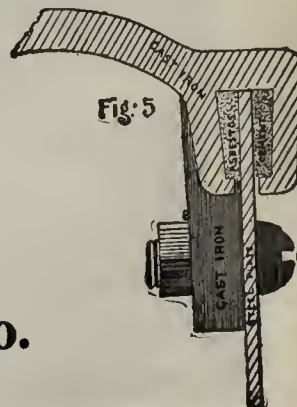
DIGHTON FURNACE CO., Taunton, Mass.

GILT EDGE



stands for best when applied to furnaces. The many dealers who have installed and the thousands of householders whose homes have been heated by our furnaces show they like the Gilt Edge, as will be seen by the testimonials they have written. Let us send you a few of them.

The Keystone Joint used in Gilt Edge Furnaces is the only permanent gas tight steel and cast iron joint on the market.



R. J. Schwab & Sons Co.
MILWAUKEE

Our New Ideal Premier Tank Heater

is now ready for the
market, and we invite
your critical examina-
tion of its various fea-
tures of construction.

Send for 1902
profusely illus-
trated catalog.

AMERICAN RADIATOR COMPANY

Lake and Dearborn Streets,
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Ideal Premier Tank Heater.

New York,

Philadelphia.

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WEIR ALL STEEL GAS AND SOOT CONSUMING FURNACE.

THE HEAVIEST STEEL FURNACE MADE.

Absolutely gas and dust tight. A great heat-producer
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THE MEYER FURNACE CO.,

1300-1304 S. Washington St.,

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PEORIA, ILLS.

"The Handy Furnace Pipe."

MADE WITH A VIEW OF BEING SAFE.

The saving of labor in putting it up really makes it
the cheapest hot air pipe on the market.

MANUFACTURED BY

F. MEYER & BRO. CO.,

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PEORIA, ILLS.

A FEW POINTS OF SUPERIORITY

Fire pots are of fire clay tiling and never burn out.

Radiator surface in proportion to grate surface unusually large.

Only absolutely gas tight furnace made.

Novelty of construction makes an easy seller.

Tested for fifteen years.

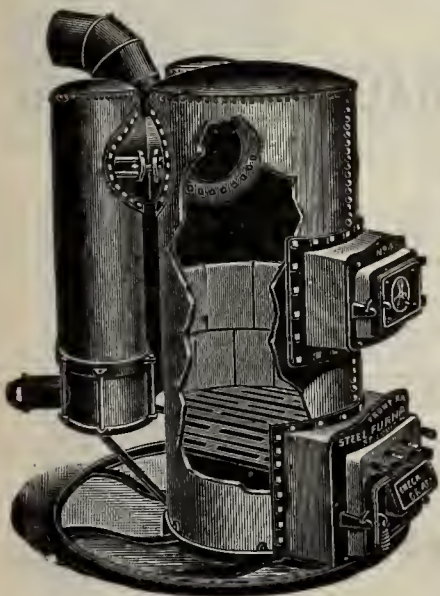
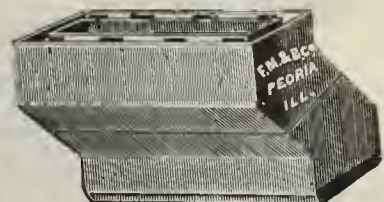
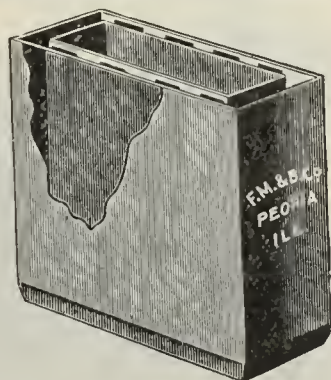
Repairs are seldom necessary.

Are guaranteed to burn hard or soft coal.

No direct draft to warp out of shape, nor packed joints to leak gas.

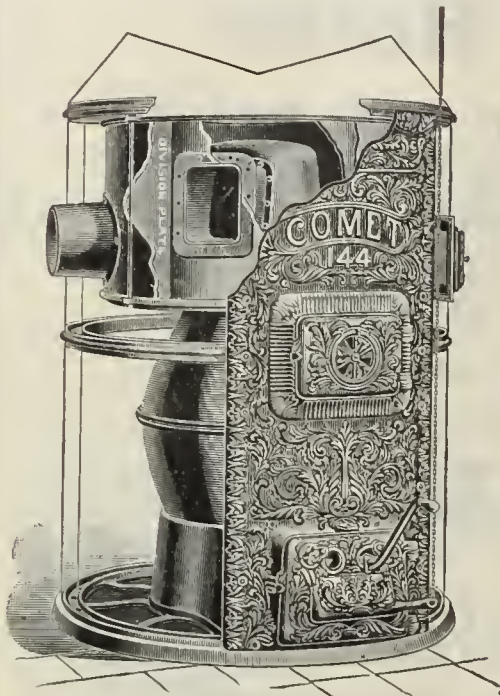
Katalogue and prices will be mailed you upon application.

FRONT RANK STEEL FURNACE CO., 2301 to 2309 Lucas Ave., St. Louis, Mo.



THE STAMFORD FOUNDRY COMPANY
SINCE 1830 MAKERS OF CELEBRATED
FURNACES, RANGES AND STOVES
THOUSANDS IN USE RECORD EVERYWHERE ESTABLISHED

References to Many of Our Furnaces, Now and Through Past 25 Years in Continuous Service



COMET
Heavy Steel Drum

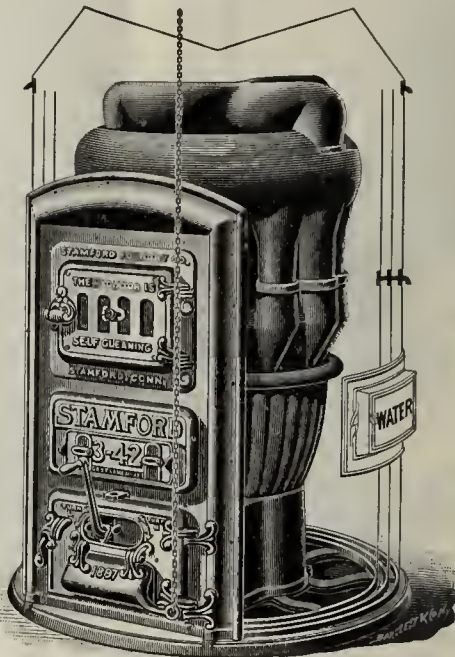
Both furnaces are well made—all exposed parts heavy. A generation of constant service establishes their record for durability, economy, powerful heating, easy to set, simple to operate.

The radiator of the STAMFORD ALL CAST FURNACE is a combined dome-tubular and cylinder construction of immense capacity and heating power.

The COMET radiator is made of heavy cold rolled steel. Fire pot and exposed parts especially heavy and durable.

The COMET is made for satisfactory service and not for PRESENT cheapness, ENDING IN EARLY DESTRUCTION.

OUR GUARANTEE follows everything we make, whether stoves, ranges or furnaces, and is established by our over 70 years' record.



STAMFORD All Cast
Portable or Brick Set
This is the Celebrated American Improved

Send for Catalogue, Capacities and Prices

THE STAMFORD FOUNDRY COMPANY
STAMFORD, CONN



The Robinson Tubular Warm Air Furnaces

give universal satisfaction wherever used.

They are up-to-date in every respect and have many special features not found in other furnaces.

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WINCHESTER

A man said he talked to himself for two reasons: First, he liked to hear a man of sense talk; secondly, he liked to talk to a sensible man. Now, we like to talk to a sensible fitter and try to make him appreciate the merits of the "WINCHESTER" heater. It brings money to both him and us. Prove it. Smith & Thayer Company Boston, Mass.; 105 Beekman Street, New York.

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Monarch Air Blast Furnaces.

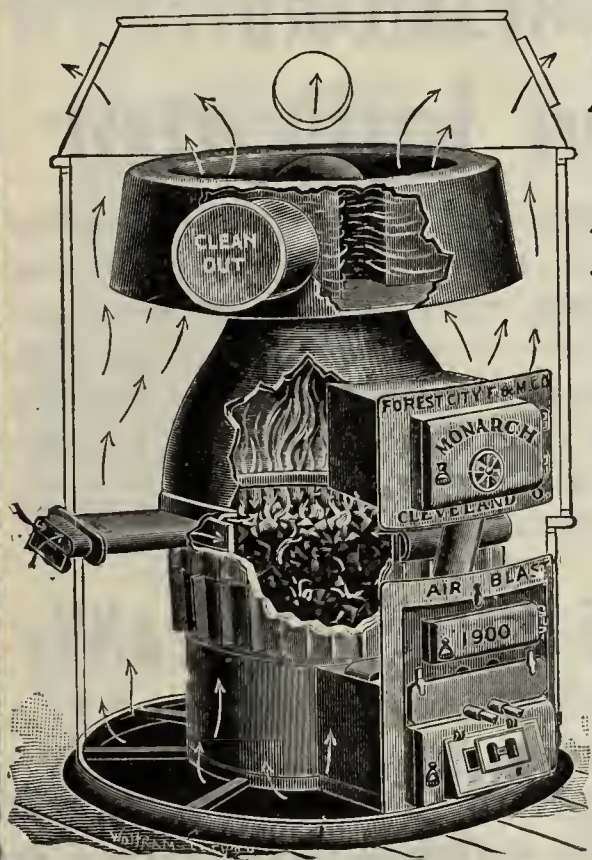
All Cast Iron.
For Hard and Soft Coal.

Send for 1902
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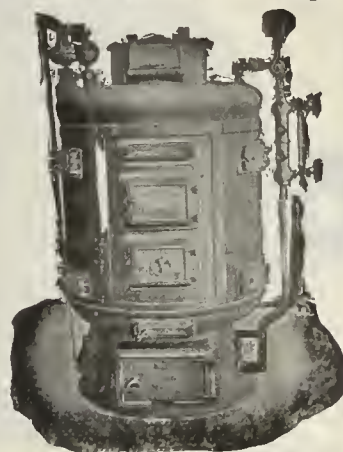
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Gray Iron Castings to order. High
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Pierce BOILERS and RADIATORS

for Steam and Water Heating.



Pierce Improved Florida Steam Boiler.
LARGE HEATING CAPACITY.
ECONOMIC IN FUEL CONSUMPTION.

Endorsed by the foremost Architects
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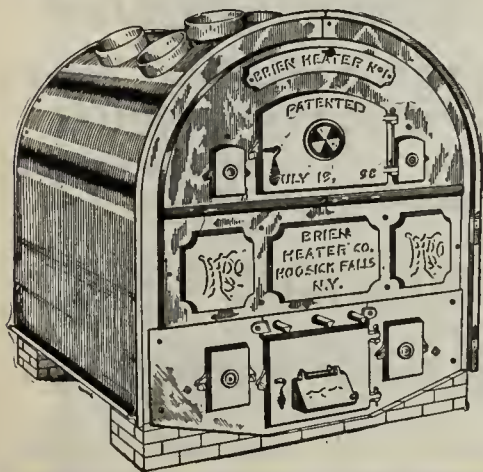
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Brien Heater

A perfect, all cast WOOD or
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other Hot Air Furnace as
low down as the "BRIEN."

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Portable OVENS

FOR
CORE BAKING,
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OVENS FOR Bakers, Confectioners, Hotels, Etc.

Made in all sizes, single and double, for coal, wood,
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ROBBIN HOT WATER HEATER.

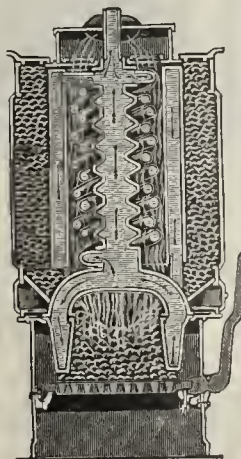
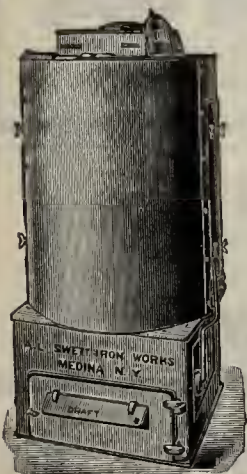
For heating dwellings and other
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SAVES FUEL,

and is a success in every way.

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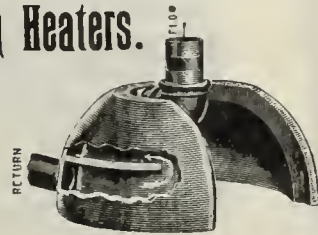
A. L. Swett Iron Works,
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The Champion Hot Water Combination Heaters.

They Fit Any
Furnace.

Base section when
used without ring
sections



Ring Section



These Heaters are made in five sizes diameter, and
from 100 to 700 square feet radiation capacity.
Will heat those cold rooms or an addition to the build-
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Write for new circular. Manufactured by

FRANK D. STOLZ.
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EXCLUSIVE EXCELLENCE.

THE "A B C" DISC VEN-
TILATING FANS

are faultless in their expediency for the
removal of impure air and gases.
Their scientific construction and me-
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the highest degree of efficiency at a
minimum cost of maintenance.
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The Helios-Upton Co.'s

First on the Market. 150,000 Sold.



430 FLAT BACK.
3 inches in diameter.

STANDARD Oven Indicator

has a dial graduated in the simplest possible manner, as can be seen. This graduation was adopted because every oven has its own peculiarities, and an indicator adjusted to one oven might be incorrect for another. The *Standard* can be adjusted to any oven and has no complicated parts. Made in 3 styles.

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GLENDALE Stoves and Ranges



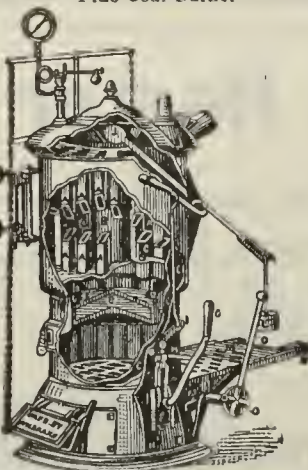
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TORRID
Fine Coal Burner



For Steam or Hot Water Heating

This boiler is made on an entirely new principle and is

The Only Boiler

that will burn Pea or Buckwheat Coal successfully.

SAVES TIME. SAVES MONEY.
RESULTS UNEQUALED.

MADE BY

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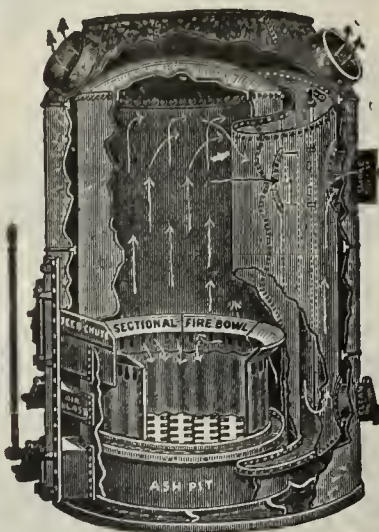
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The TORRID Steam and Hot Water Boilers
for burning either anthracite or bituminous coal.

Factory, Hackettstown, N. J.

Send for catalogue.

The Torrid Zone Furnace



is a trade winner because it has points of merit peculiar to itself that can be found in no other steel furnace. Our new catalogue is now ready to mail and a description of our Hot Air and Hot Water Combination Furnace can be seen in it. We furnish either the cast iron lining or the fire brick at the same price. Our Wood Furnace is called a powerful heater by those who use it.

CATALOGUE FREE.

Lennox Manufacturing Company,

Elghth Ave. and Frederick St.,
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Stove Dealers

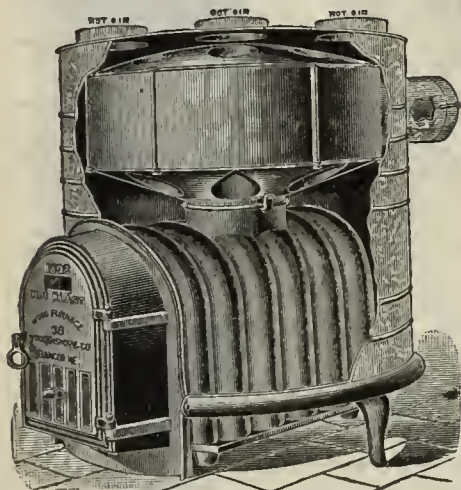
will make money and save money by using

Dixon's Graphite Cement.

There is nothing equal to it for repalring fire brick in stoves, furnaces, etc. Let us send you sample and prices.

JOSEPH DIXON CRUCIBLE CO., - JERSEY CITY, N. J.

WOOD FURNACES



THE HOT BLAST.

Made With SINGLE PIECE Fire Box Body—

a practically indestructible casting, heavily corrugated to stand the strain.

HAVING IMMENSE AREA OF RADIATING SURFACE—

all directly exposed to the heat of the fire, giving great heating capacity even when fire is low.

MADE IN A WOOD SECTION,

where wood is burned practically—not theoretically.

Our IMPROVED MONITOR,

2 sizes, PORTABLE OR BRICK SET

Our Low Priced HOT BLAST,

3 sizes, PORTABLE OR BRICK SET.

Thousands in use in all sections of the country.

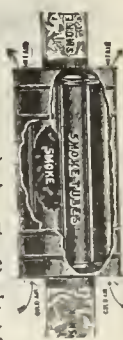
Send now for illustrated booklet giving full particulars and testimonials.

Wood & Bishop Co., Established 1839. 329 Main St., Bangor, Maine.

Common Sense Circulator and Radiator.

(Patent applied for.)

This Heater is so simple that its superiority over all others is plain. Being open at each end the cold air is taken in at the bottom, passing out at the top heated; producing a circulation unequalled by any radiator. Is easily cleaned or repaired. Takes the place of a joint of pipe. Diameter of casings, 10½ and 12½ inches. Send for prices.



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755-757 W. Madison St., CHICAGO, ILL.

MONCRIEF FURNACES

PORTABLE
and BRICK SET.

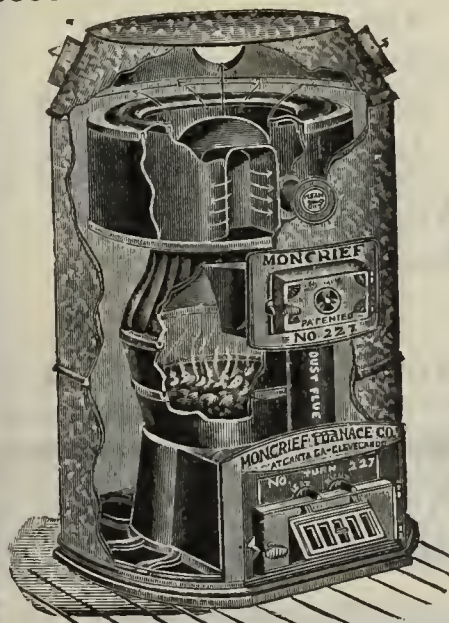
Unequalled in the Great
Essentials---Simplicity,
Durability, Economy,
Capacity, Comfort.

NO BETTER MADE.

Write for catalogue. Special price to the trade.

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The MONCRIEF FURNACE &
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MICA

Specially Prepared for the
Stove Trade.

OHIO MICA CO., CANTON, OHIO.

FOR **MICA**

Sheet, cut or uncut, Powdered and Flake,

WRITE TO

ASHEVILLE MICA CO.,
ASHEVILLE, N. C.

Fire Brick Linings

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Stoves, Ranges, Furnaces.

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CUPOLA LININGS

For Iron and Brass Foundries.

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MICA

ASSORTED PACKAGES.

Put up expressly
for the Retail Trade.

ONE POUND—4 SIZES.

¼ lb. each size.

North Carolina,	\$2.00	4½ x 6	2½ x 3
Wyoming,	1.70	2¾ x 3¼	2 x 5

TWO POUND—8 SIZES.

¼ lb. each size.

North Carolina,	\$3.80	2 x 3	2¾ x 3½
Wyoming,	3.25	2 x 4	2½ x 3
		3 x 3	2½ x 5
		3 x 4½	4½ x 6½

THREE POUND—12 SIZES.

¼ lb. each size.

North Carolina,	\$5.25	4½ x 5	2¾ x 4
Wyoming,	4.25	2¾ x 4½	2 x 4
		3 x 3	2¾ x 2¾
		2½ x 3	5 x 6½
		2 x 3	2½ x 5
		2 x 4½	2½ x 3½

Above Prices Net. No discount.

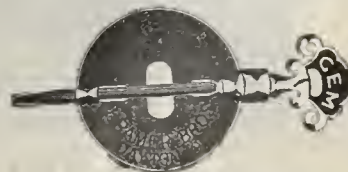
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NEW YORK.

CHICAGO.

STOVE PIPE DAMPERS

Fine Nickel Plated Handle.



Sharp Pointed Spindle.

Manufactured by

KRAMER BROS., Dayton, Ohio.



Semi-Sectional View.

Every Practical Stove Dealer

knows that heat without circulation is valueless. The best circulator gives the best heat.

New Era Radiators have *perpendicular* tubes. They take the cool air in at the bottom and rapidly heat it in the natural way *as it ascends*. Their construction tends to *increase* circulation instead of *retard* it, as tubes in any other direction would. All the products of combustion are compelled to touch the outer or inner surface of the tubes and the maximum amount of heat is radiated and circulated throughout the room.

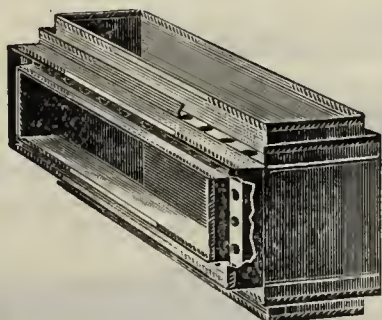
If you would sell the best Radiator, you must buy the best. "*New Eras*" are best in material, best in workmanship, best in appearance, and best in results. Made in three styles and many sizes. Prices are right, affording a large margin. Don't buy something cheap on which you make but little. People are willing to pay a fair price for a good article. Send for our inducements now and be prepared to talk *New Era Radiators* at the right time.

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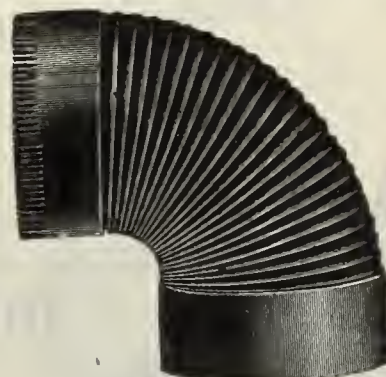
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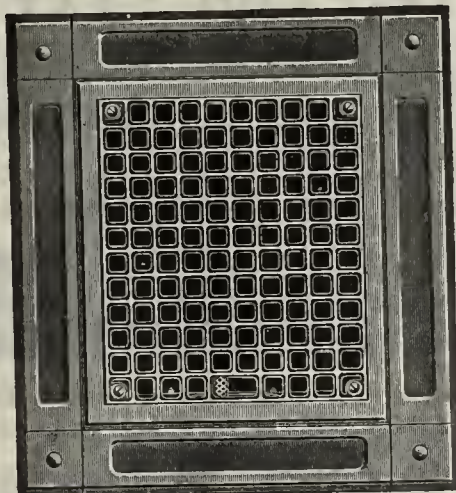
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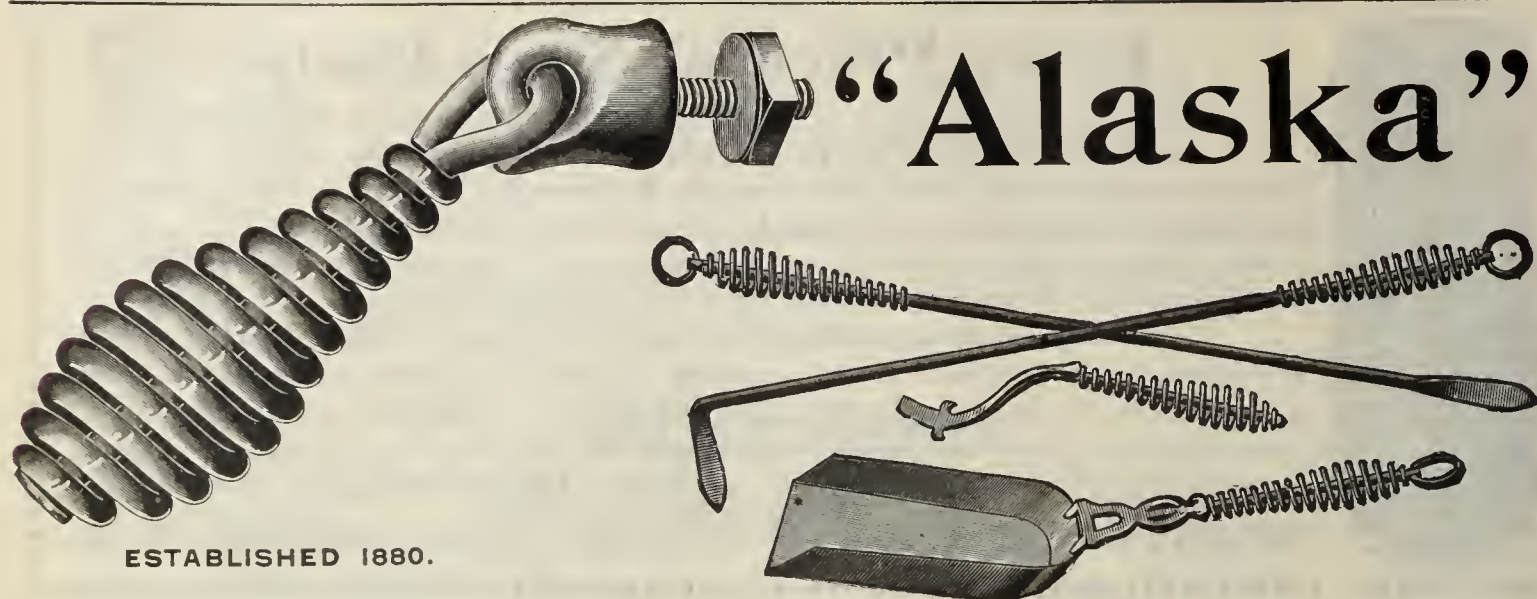
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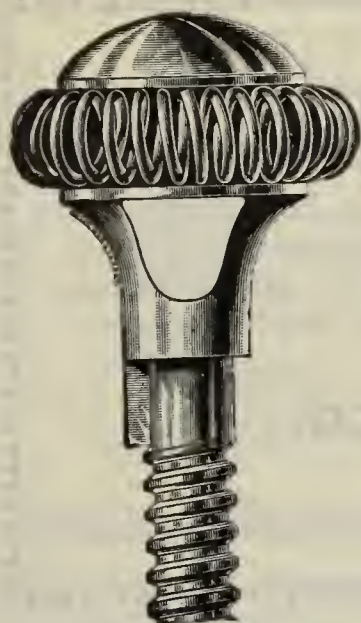
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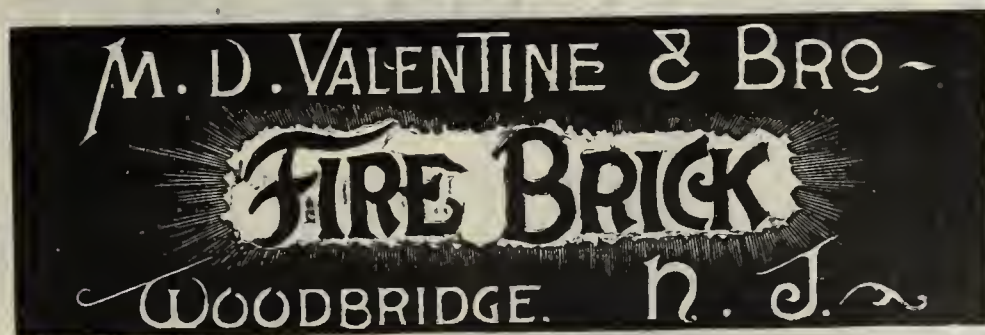
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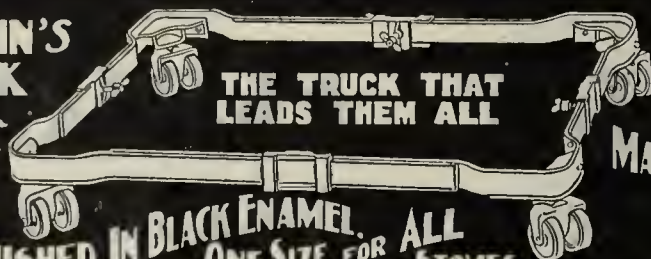
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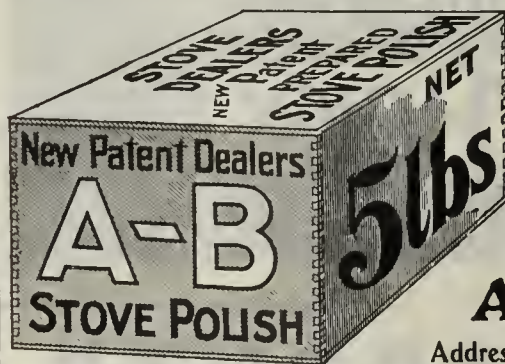
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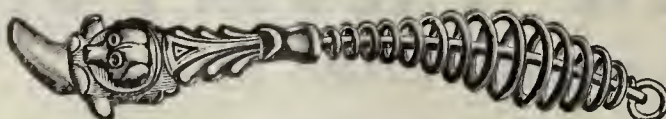
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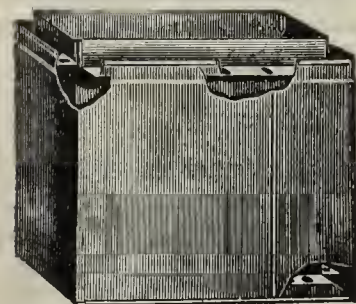
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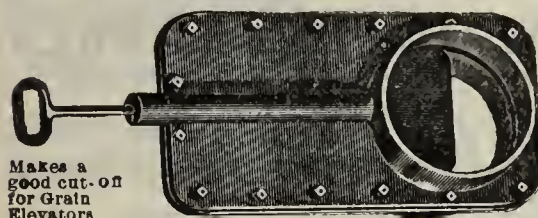
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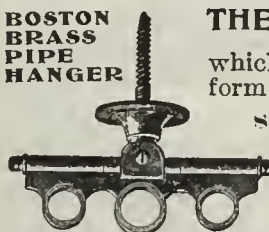
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Wash from flush rim follows.
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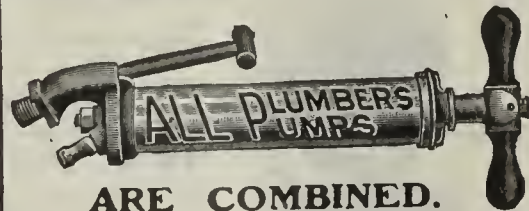
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Stands 500 lb. pressure. Contracts and expands with the metal. Joints easily separated. Has three times bulk of Red Lead. For Steam, Water, Gas, Oil or Chemicals.

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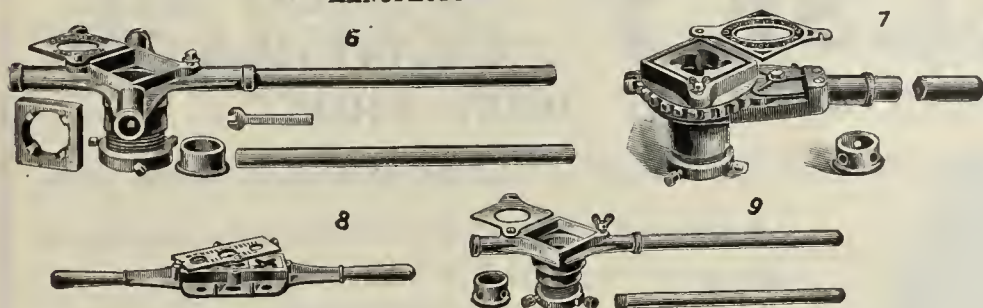
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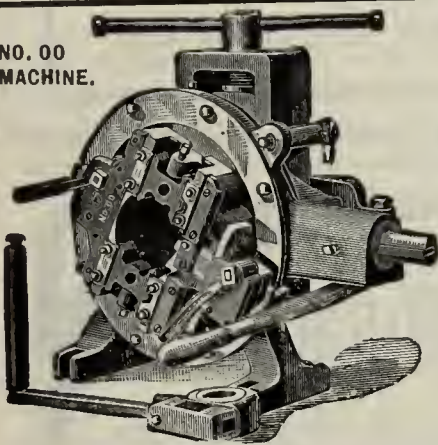
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FOR HAND OR POWER.

Occupy less floor space, require less power to run, more simple of construction, far cheaper than any other machine of same range.

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MACHINE.**NO DUST OR CHIPS**

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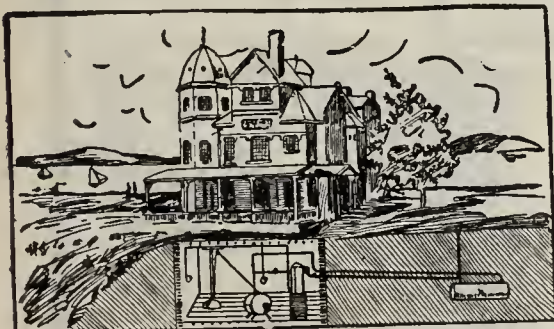
Economy combined with strength. No solder required. Joint made while wet.

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The advantages of this joint over all present systems are: Absolute simplicity; no extra tools required.



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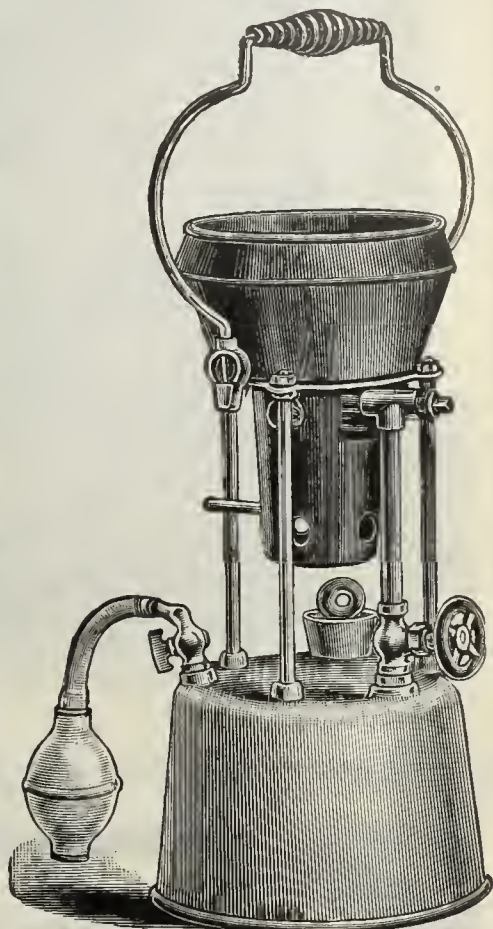
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The "DURO" Plumbers' Furnace

Has Drawn Steel Reservoir
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we have fully succeeded in producing the best furnace made. Most perfect in every detail. Of the highest efficiency. In operation, positive and reliable. Of substantial construction; combining lightness, strength and durability, at no more cost to the trade than the old style.

All component parts are interchangeable, being accurately made and fitted before shipment.

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All sizes and shapes.

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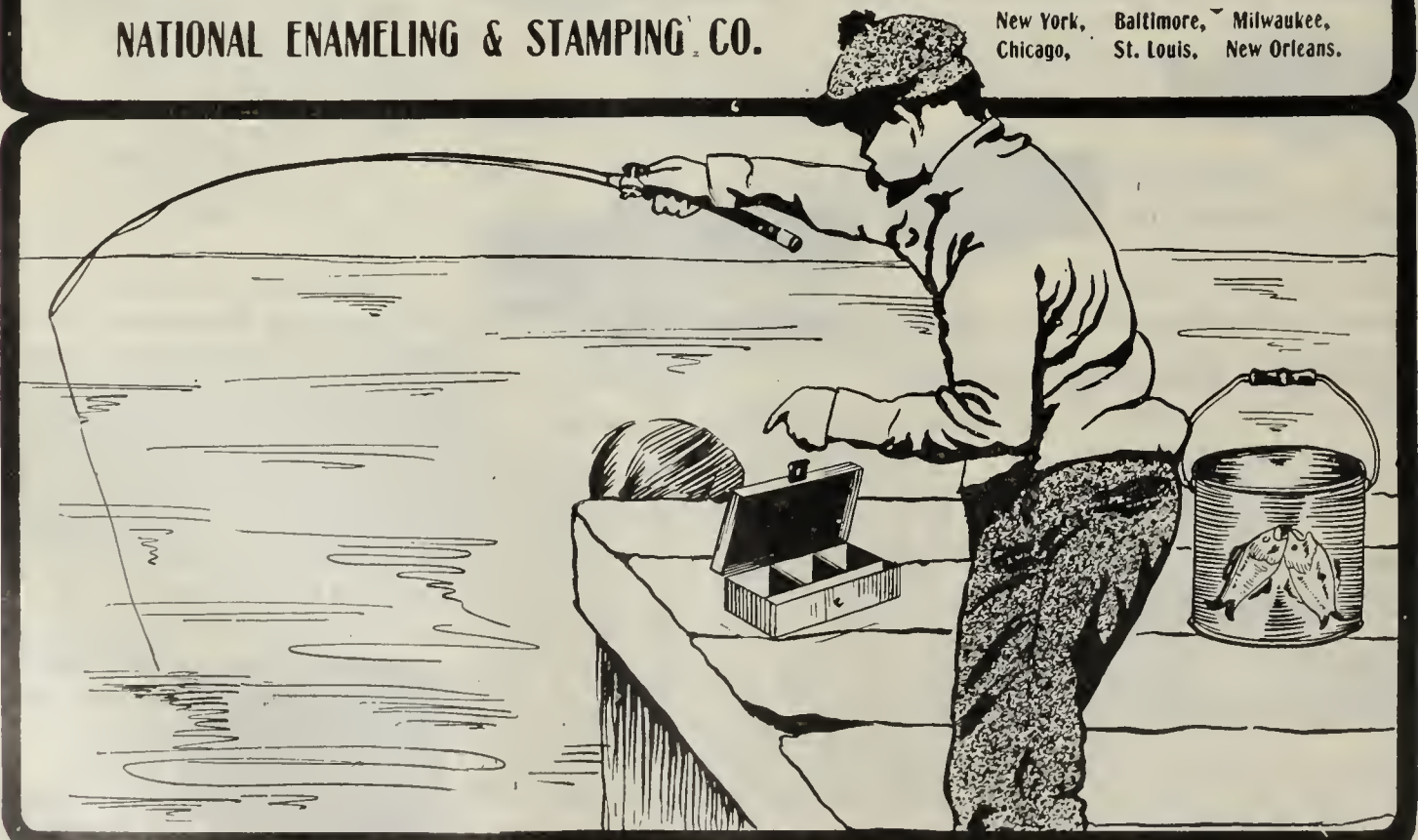
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NEW YORK AND CHICAGO.

New York, August 2, 1902.

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Volume LVIII.....No. 5
Index to Reading Matter.....Page 64

The South African Market.

The conclusion of the war in South Africa is being followed by the beginning of a reconstructive settlement of the districts most largely affected by the late conflict. According to the Johannesburg correspondent of the London *Times* this task is being taken in hand with all possible dispatch. All of the departments of State are working at full pressure, but the amount of work to be done is so enormous and the obstacles to be removed are so great that it will take a long time before any substantial results are likely to be seen. One of the great impediments toward a rapid reconstruction in the devastated regions is the difficulty of transporting goods from the coast. The *Times* correspondent says that not only is there about twenty years' arrears of work to be caught up with, but the destruction caused by the war during the last three years has also to be made good. Hospitals, asylums and jails are waiting to be built or to be provided with increased accommodations. There are also a large number of public buildings to be erected, while some of the towns in the Transvaal colony have practically to be rebuilt. In addition, thousands of private dwellings, stores and buildings of all kinds have to be repaired or erected. The material needed for all these purposes would, at the present rate, take years to transport from the coast, and until a large addition to the rolling stock of the railroads is secured comparatively little reconstruction work can be accomplished. Undoubtedly, however, the necessary enlargement of transportation facilities will be provided as quickly as possible. The South African market will offer an immense field for the sale of goods of all kinds which go into buildings, as well as household goods, agricultural implements, and in fact everything required or used by a civilized community. It is reasonable to suppose that a considerable volume of South African business will come to the United States, provided the shipping facilities and the arrangements for marketing the goods in that country are properly attended to by our manufacturers and exporters. All Europe is looking to South Africa as offering one of the most favorable opportunities ever provided for the marketing of their surplus goods. The complete reconstruction of the devastated country, it is said, will take fully ten years. With the developments naturally to be looked for under the new régime there will be a call for a vast amount of manufactured goods of all kinds. There is no reason why the United States should not secure its full share of the trade.

Enlarging a Retail Business.

The successful retail merchant, like the successful manufacturer, is constantly endeavoring to enlarge his business. He must see his trade increasing. He realizes that much of his business is each year being done on a closer margin, and as the percentage of profits decreases the volume of trade must be increased. These are self evident facts, and the question of how to increase his trade without materially adding to the fixed charges of his business is one of prime importance. There are a number of lines of goods that can well be sold in the retail stove and hardware store and added to the regular stock without necessitating a larger selling force or materially increasing the expenses of the store. Trade can be worked up on such goods in the dull season. With the expense of perhaps one or two additional employees the retail business can be enlarged by adding new lines of goods. An increased trade and an enlarged field might be readily found by the retailer in taking up some kindred lines which are not now to be found in all stove, hardware and house furnishing goods stores. Among these lines may be mentioned paints, varnishes and painters' supplies, fishing tackle, athletic goods, hammocks, photo goods, electrical goods, such as door bells, batteries, &c.; belting, small tools and silver ware, composing plated knives and forks and silver novelties. Many retailers, too, have with very satisfactory results taken up other lines, such as harness, sewing machines and agricultural implements. In this matter it is obviously necessary that good judgment be used in deciding on the advisability of thus enlarging the scope of the business, and that at the same time skill and energy be put forth in making and establishing a market for the new lines. The benefit which the whole business would naturally derive from this infusion of enterprise and effort is another argument for thus broadening the field.

Read Your Trade Paper.

One sometimes hears a tradesman say that he has no time to read his trade paper; the details of his business absorb so much of his energy, that, after his day's work is ended, he has none left to spend upon the perusal of anything beyond the daily newspaper. If the case of a man of this kind is investigated it will usually be found that he is giving up a large share of his time and attention to the petty details of his business, work which might easily be performed for him by a clerk. This is a short sighted policy. It is the progressive, up to date business man who will tell you that the time he devotes to reading his trade paper and trade literature generally is one of his best investments. As well could the professional or scientific man expect to make a success in his line without keeping himself abreast of the developments in his field of work, as presented in the special organs of his profession, as can the tradesman afford to ignore the trade news and the helpful ideas as to new methods, new goods and new developments in his field that are presented in his trade journal. The trade paper should be read carefully each week, in order to obtain from it all the benefit possible. The wise tradesman, moreover, will not only read his trade paper

himself, but will pass it on to such of his employees as he believes would be interested in and helped by it. It is the only method whereby a wide acquaintance with what is going on throughout the country in his line of business can be secured by any tradesman. The trade press, as a class, is loyally working for the good of its clientage, and it is entitled to their support and active encouragement. Therefore, we say to every tradesman, do not neglect to read your trade paper regularly and fully, even if you have to make a sacrifice of an hour or so of recreation each week to do so.

Editorial Notes.

It is a matter of regret that the current high prices in so many lines of goods and the absorption of manufacturers' energies in the execution of orders for the home market are interfering seriously with the regular supply of goods called for by foreign buyers. Houses in the export trade refer to this fact as operating to materially diminish the volume of business which might otherwise be done, but the ease with which American goods find foreign sale furnishes something of a compensation, as increased varieties are going abroad. The next decline in prices of manufactured products is awaited by those cultivating foreign business with anticipations of the great opportunity which will be afforded for entering more aggressively and successfully than ever before into the markets of the world.

The very substantial basis on which the iron trade of the country rests is shown by the heavy transactions in pig iron for delivery next year. The buying movement is general, all markets reporting an active demand, which comes from all classes of consumers. The disposition to provide for requirements so far in the future is largely prompted by the present scarcity of iron and the belief that no great improvement will be experienced for some considerable time. The coal miners' strikes in Pennsylvania and the Virginias drag along with little prospect of an early settlement and the supply of pig iron is thus still curtailed for lack of fuel. Consumers who must have iron are compelled to pay such premiums for early delivery that the prices named for next year are attractive, even though much higher than those paid on contracts running through this year.

THE BUSINESS OUTLOOK.

At the end of July the summer has so far advanced that the outcome of the crops can be conjectured with a reasonable degree of certainty. The winter wheat harvest is over, the oats harvest is progressing and the spring wheat, corn, cotton and other fall crops are so far along that little can happen after this time to injure them seriously. It is, therefore, fairly safe to begin to take an account of stock and see how the country stands with regard to its agricultural interests, which are the foundation of all prosperity. It is now the belief of those who should be well informed on these subjects that the United States will this year enjoy a heavy crop of wheat, running well above the average; a bountiful yield of oats, comparing favorably with past good seasons; a "bumper" crop of corn, which may far surpass anything before experienced; a large production of cotton, perhaps above the average, and a sufficient yield of other agricultural products to rejoice the hearts of those who make a specialty of them. The drought in the Southwest early in the year and the excessive rains in numerous sections through the spring and summer wrought injury in some localities and caused heavy losses, especially in the flooded areas, but the general

condition of the country was so very favorable for growing crops that the grand result up to this time has not been seriously affected.

The basis for another year's good business thus seems to be established. The railroads which serve the agricultural sections are already counting on a heavy fall and winter traffic and are making their preparations accordingly. The managers of these lines as well as of those not directly dependent on farming interests are no longer cautious in their prognostications of the future, but speak in the most sanguine terms of the great volume of business which they expect to handle. They are embarking in schemes for the betterment of their facilities with confidence in their ability to earn the money to pay for them. This confidence has been stimulated by the remarkable ease with which the country endured the heavy reduction in last year's fall crops. Although the loss was so great that for a time a serious backset to business was apprehended, yet the momentum of the previous prosperous years was sufficient not only to carry us safely over to another crop season, but even to swell the demand for manufactured products to unprecedented proportions. This is strikingly shown in the statistics just published by the American Iron and Steel Association, which give the marvelous total of 17,012,315 gross tons of pig iron produced in this country in the 12 months extending from July 1, 1901, to July 1, 1902, which was much in excess of any previous 12 months, although covering the precise period of crop failure and loss of trade on that account. Not only was this vast production required by the wants of the country, as shown by the stocks of less than 30,000 tons in makers' hands unsold on July 1, but a considerable quantity was imported besides. In other branches of the iron and steel trades and in other lines of productive industry similar results are shown. Surely after such an experience the managers of railroad interests are warranted in entertaining bright hopes for the future when the country is blessed by superabundant crops.

But is a continuance of the heavy demand for manufactured products to be expected? Has not the country supplied its wants to such an extent that a decline in trade should soon be experienced? Will bountiful crops insure the prosperity of manufacturing interests indefinitely? These are questions which present themselves to every manufacturer and merchant when he gets time to reflect upon the situation. If conditions were in any way analogous to those of any past period in the experience of the country, these questions could be answered very easily. The answer would be that the demand was not likely to last long, that the country was getting well stocked with merchandise and that big crops by no means always assured big business. But conditions have greatly changed in the past five years, and the experience of former times is not an infallible guide. Those who relied on their judgment as acquired by that experience, and have been looking for a collapse in prices since the culmination of the boom of 1900, have paid dearly for their lack of faith in the stability of the market. The great growth of the country in population, the wonderful prosperity of Western farmers, the huge foreign demand for all classes of American products, the comparatively light imports for a long series of years, the advance of the United States to a commanding position in the world of finance, the organization of colossal industrial corporations—all these and more have had their effect in increasing the business of this country and expanding it to dimensions beyond the expectation of the wildest dreamer. As far as can now be observed no unfavorable indications appear. The coal miners' strikes in Pennsylvania and the Virginias cannot last much longer, and when they are settled the effect on general business will be decidedly beneficial. Conservative business men look with some apprehension on the pyrotechnical display in Wall Street, but even that can be read as one of the manifestations of faith in the future, as Wall Street is quite a reliable barometer as to business prospects. With all external conditions favorable, the future of the iron trade appears to depend largely upon itself, being a question of supply and demand. Productive capacity, therefore, should not grow too rapidly.

—*The Iron Age.*

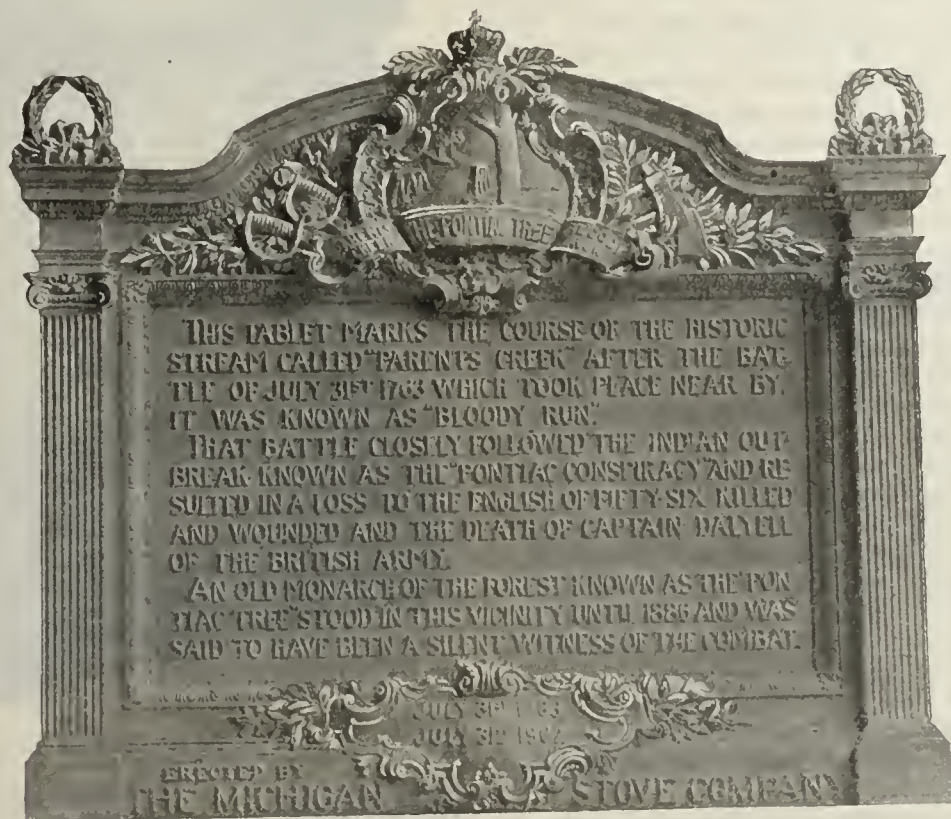
THE MICHIGAN STOVE COMPANY'S HISTORICAL SITE.

A notable historical event was commemorated at Detroit on Thursday of this week by the unveiling of a bronze tablet to mark the spot on the grounds of the Michigan Stove Company upon which formerly stood the Pontiac tree, around which occurred the battle of Bloody Run on July 31, 1763. An interesting programme was arranged for this occasion, which was printed with a view to making it of value as a souvenir, comprising a four-page booklet, artistically designed and presenting a photogravure of the tablet, as shown in the accompanying illustration.

The exercises were under the direction of the Society of Colonial Wars in the State of Michigan, and were participated in by the Michigan Society of the Sons of the American Revolution as invited guests. The programme was as follows, Hon. Thomas W. Palmer, ex-

The Lindemann & Hoverson Catalogue.

The 1902 catalogue of the A. J. Lindemann & Hoverson Company, Milwaukee, Wis., which has just been issued, consists of 196 pages, bound in a stiff purple colored paper cover, with a design in green and the address of the house in gold. The first section of the work is devoted to steel cooks and steel ranges, under the names of Popular, Gem, Ruby, Marvel, Garnet, Sunbeam and L. & H. Crown. The Popular range is made to stand on feet and is provided with reservoir. The Gem is a range of similar construction, with a steel base, while the other ranges are of a more pretentious character, having warming shelves, high closets, reservoirs and water backs. Some of large size are adapted for hotel use. They are also provided with a gas cooking attachment. The next 32 pages are devoted to the company's cast iron wood cooks and ranges, which are made in a variety of styles and designs, with end ash pit,



Bronze Tablet Erected on the Michigan Stove Company's Grounds.

president of the Society of the Sons of the American Revolution, presiding:

1. Unveiling of the tablet, by Theodore H. Eaton, Governor of the Society of Colonial Wars in the State of Michigan.
2. Presentation of tablet, by Hon. George H. Barbour, vice-president the Michigan Stove Company.
3. Acceptance of tablet in the name of the people, by Hon. Wm. C. Maybury, Mayor of Detroit.
4. Brief historic address, by Prof. A. H. Griffith of the Detroit Museum of Art.
5. Singing of "America" by the audience.

The tablet is one of the finest ever erected in Detroit. It was designed by E. T. Schoonmaker of New York and modeled and cast by the American Bronze Foundry Company of Chicago. The work of the modeler is highly complimented by Mr. Schoonmaker, who, in a letter to Mr. Barbour after the receipt of a photograph of the tablet, said: "The man who did this work is an artist. His treatment shows knowledge of his business, and I am glad you have been so fortunate as to have it placed in such good hands."

The location of the tablet is on a brick wall which runs along the company's premises on Jefferson avenue from the main building to the new building just erected. Between the two buildings stands the big Garland stove which was exhibited at the Chicago World's Fair and the center of this stove is exactly where the old Pontiac tree stood. The tablet is placed on the wall immediately in front of the big stove.

high shelves, hot closets, reservoirs and all the modern labor saving devices and conveniences. The following portion of the catalogue is occupied by oval air tight heaters for coal or wood, which are succeeded by the Meteor and Comfort radiators for attaching to the smoke pipes of heating and cooking apparatus for heating an upper room.

Soft coal heaters and oak stoves are then considered, and are followed by handsome square nickel trimmed parlor heaters, globe stoves, laundry stoves and farmers' boilers. Another section of the book is devoted to gasoline stoves of both high and low junior types, and a variety of wickless blue flame oil stoves for cooking and heating. Gas hot plates are shown and the New Century incandescent vapor lamps for lighting foundries and factories, also for chandeliers for lighting stores and in the form of students' lamps for reading. In the closing pages of the catalogue are shown lamp oil stoves, roasters, dripping pans, stove pipe, elbows, stove polish, pipe dampers and other supplies. The heating and ventilating goods presented in the catalogue consist of coal and special wood hot air furnaces, and round horizontal sectional steam and hot water heaters, tank heaters, laundry heaters and radiators.

THE LINCOLN STOVE COMPANY, Toledo, Ohio, have broken ground for an addition which will more than double their capacity.

Red Cross Stove Catalogue.

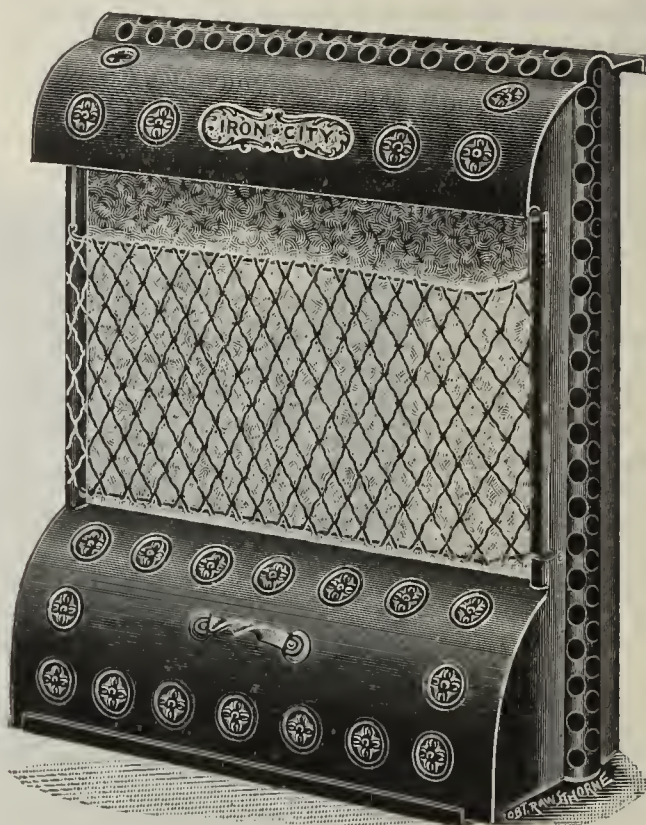
The thirty-sixth annual catalogue of the Co-operative Foundry Company, Rochester, N. Y., for 1902 and 1903 has reached us. It consists of 138 pages and is bound in stiff covers, showing on the front in red and black a cupola with the molders gathered, with their ladles, to get iron to pour off. In the first pages are presented views of the company's foundry, offices and warehouses in Rochester and in Lincoln Park. The introduction states that the concern do not hesitate to claim that "once a customer, always a customer," applies forcibly to the patrons of the Red Cross productions. The place of honor in the catalogue is given to the Red Cross Victor, followed by the Red Cross Princess, which are steel ranges of the most modern type, so constructed that the fire box equipment can be readily removed or replaced. They are provided with ash pans, warming shelves, high hot closets, reservoirs, drop oven doors and tea shelves. The top is provided with a plunge damper, and the pipe with a combination wheel register and damper. The broiling door is large and the oven door has a thermometer. One of the features of the range is the use of a cast iron base section for the extreme bottom of the range, contributing to ease in setting and to the cleanliness of the kitchen. Several pages are devoted to the Imperial Red Cross, which is a high grade square cast range of the portable type and of sheet flue construction, with high shelves, hot closets, reservoirs, ash pans and draw out oven shelves. The fire box equipment, whether duplex or dock ash grate, can be readily removed or replaced. The Red Cross Monarch is a range of different design but of similar equipment and excellence. The Peerless Red Cross and the Colonial Red Cross ranges are less pretentious goods, and the Right Red Cross is a range having a fire box on the right hand end. The Regal Red Cross is the leader of the square ranges, having four cooking holes on the top and provided with all the modern conveniences. This is followed by the Red Cross Pilot, Red Cross Dexter, Rival Red Cross, Red Cross Emblem and Red Cross Talsman. A three-burner gas cooking attachment, with oven and broiler, is also shown, with instructions for attachment and use. The company also make a variety of flat top cooking stoves with deep ash pit, end shelves, with pouch feed for soft coal and broiler doors for hard coal, and with reservoirs and wood grates. The Ideal Red Cross heads this line, followed by the Red Cross Hero, the Red Cross Challenge, the Red Cross Laurel, the Red Cross Champion and the Red Cross Mascot.

The parlor and heating stoves are headed by the Royal Red Cross, a high grade square parlor stove, not only of elegant appearance with handsome nickel trimmings and equipment, but also having features of exceptional merit in its construction. The Red Cross Bee, the Red Cross Garnet and the Red Cross Sunbeam are other modern square parlor heaters, the latter being adapted for heating a room above. The Red Cross Echo and Red Cross Carbon are followed by the Red Cross Oak, which is made in a variety of sizes and styles adapted for the use of either coal or wood. The Red Cross Star is a handsome gas heater, with a large illuminating front, for natural or artificial gas. The Black Prince and Gem are cast iron heaters of the globe stove type. A variety of laundry and tailors' stoves are another line. The Red Cross Triumph and Sylvan Red Cross are full nickel trimmed cottage parlor wood stoves, designed to burn wood from 22 to 26 inches in length, one with a double heater attachment and the other with a siphon flue. These are followed by the Crystal, Sunflower, box stoves, and the Warwick, an oval stove with sheet iron sides. The Bermuda is a hot air furnace put out by the company, having a large combustion chamber supporting a large indirect draft radiator. The Ajax furnace is of the return flue steel radiator type. The goods shown close with farmers' boilers and caldron kettles having a capacity of from 15 to 90 gallons. The last pages are devoted to directions for setting and operating stoves, which can be read with advantage at the beginning of the stove season, in order to avoid some of the troubles that come

from improper construction and location. The catalogue contains a code index and an index of the goods presented.

The Iron City Gas Stove.

Among the new goods which have been prepared for the season of 1902-1903 by the H. Adler Company, Pittsburgh, Pa., is the improved design embodied in the new Iron City gas stove, of which an excellent idea will be gained from the accompanying illustration. The body portion of this stove being made of one piece of sheet steel renders it unusually strong, while its appearance is neat and attractive. Another feature to which the manufacturers call especial attention is the slotted base in



The Iron City Gas Stove.

which the fender rests. These stoves are designed for use with natural gas as a fuel. They are finished in planished iron, brass, nickel and oxidized copper.

Gas Stoves and Stove Trimmings.

The Fanucr Mfg. Company, Cleveland, Ohio, have issued a 56-page catalogue devoted to an extensive line of hardware specialties, many of which are well adapted to the stove trade and those who handle house furnishing goods. The first articles shown are the Ever Ready and Star coffee mills, followed by toilet paper holders, handles for Mrs. Pott's sad irons, family ice tongs and ice picks and a quilting frame clamp. Another section is occupied by gas hot plates, four different one-burner apparatuses being shown, with the Rival, made with two and three burners. The Arctic stove trimmings consist of short and long handled coal shovels, pokers and slicers, with hook or straight point, and provided with spiral wire cool handles, and a variety of styles of cover lifters of the cool handle spiral wire style. A number of cast iron cover lifters are also shown with hollow handles and perforated to prevent their becoming overheated, together with carpenters', shoemakers', upholsterers' and tack hammers. Arctic spiders, sad iron stands and stove rests are followed by stove scrapers and an extensive line of flat and round head stove bolts, and a complete line of hot air registers and Arctic stove pipe dampers. The last pages of the catalogue are devoted to a number of different styles of toy stoves and ranges, toy pistols and advertising novelties.

THE WYANDOTTE STOVE COMPANY of Topeka, Kan., have been incorporated with a capital stock of \$20,000.

The Michigan Manufacturers' Association.

George H. Barbour, vice-president and general manager of the Michigan Stove Company, has been elected president of the Michigan Manufacturers' Association, whose headquarters are at Lansing, Mich. J. O. Beecraft, cashier of the Estate of P. D. Beckwith, Dowagiac, has been elected first vice-president, and another stove manufacturer, A. O. Bement of Lansing, has been elected treasurer. J. J. Hanshue is secretary. The association has been formed for the purpose of cultivating acquaintance and a friendly relation among manufacturers, of facilitating the interchange of ideas for mutual benefit and of promoting by concerted action the prosperity of the manufacturing interests. It proposes to look after important problems that are continually appearing—as, for example, transportation, discriminations, secret rate cutting, low rates on like products shipped by manufacturers in other States to territory where Michigan products should go, demurrage, car service, taxation, &c.

Economy Stoves and Ranges.

The Comstock-Castle Company, Quincy, Ill., are now sending out their fifty-fourth annual catalogue and price-list of stoves, ranges and hollow ware. It is a publication of 126 pages, 8 x 5 inches in size, inclosed in a light brown cover with dark brown lettering and the Economy trade-mark of the company in green on the front cover. In a note of introduction the manufacturers call attention to several additions that they have made this season to their previously large and well assorted line. Besides some new coal and wood cook stoves and ranges, they have added a handsome line of steel ranges and steel cook stoves and have also made some improvements in their Todd stoves. The opening pages of the catalogue are devoted to the Art Economy and I. X. L. Economy steel ranges, made with four and six holes and for hard or soft coal or wood. These ranges are said to be formed of the very best materials by skilled workmen and to embody every desirable feature of modern construction. The bodies are made of two thicknesses of cold rolled steel, interlined with asbestos board and tightly hand riveted. The outer casings of the bodies are made of the best grade of Wellsville polished steel. The ovens are of extra heavy wrought steel, strongly braced so as to prevent warping or buckling. Among their other advantages are well proportioned fire boxes, combination duplex coal and wood grate, large swing flue doors, flush encased reservoirs, furnished with cast enameled tanks; high shelves and closets of sheet steel, nickel plated steel swinging ash pan door and all the other usual equipments of a modern steel range. The King Economy steel range is a new construction, brought out this season to meet the demand for a line of cheap steel ranges, with pouch feed. A still cheaper steel range, under the name of Clipper Economy, is offered without pouch feed. These ranges are made with four and six holes, for use with soft or hard coal, or wood, and are offered with or without reservoir and low closet. Among the other goods in this line are the Triumph Economy, Derby Economy and Star Economy steel ranges, and the Cozy Economy, Boom Economy and Key-note Economy steel cooks.

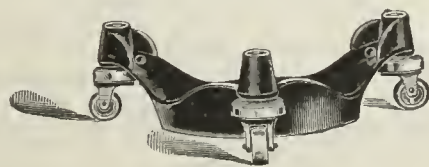
The company's line of cast ranges and cooking stoves occupy 50 pages of the catalogue. These include the Queen Economy, Deane, Moro, Lusto, Mignon, Santee, Dearborn and Cute ranges, for coal. These ranges are handsome in design, are provided with the usual features and are up to date in every respect. The Queen Economy range, for wood, and the Home Eureka, Test, Vigil, Myrtle, Medallion, Insignia and Rustler, for coal, complete the list of cast ranges. On the 12 following pages are illustrated and described the company's line of wood cooks. Among these special attention is called to the True Economy and Nectar, which constitute an entirely new square oven line recently brought out. These ranges are handsomely ornamented and mounted and are provided with extension top shelf, heavy covers and centers; draw out hearth slide, nickel stand and towel

rod, high and broad oven, large and deep fire box, lined oven doors and encased enameled flush top reservoir.

The heating stoves include the Economy, a wood base burner, all cast iron Todd stove, of new and original pattern, and a new line of air tight. These latter embrace the Economy Hot Blast, the American Hot Blast and the Dresden, for coal, and the Scorcher, Orbit, Harp, Joy and Special air tight, for wood. All these stoves are provided with the company's antireosote pipe collar, which rests small end down upon an inside flange. These heaters present an attractive appearance, being tastefully decorated with a judicious application of nickel trimming. The Oak stoves shown embody the very latest form of construction with all the modern desirable features. Among these are the Prize Oak, Junior Oak and Saxon Oak. The concluding pages are devoted to ground and unground hollow ware, including pots, skillets, kettles, griddles, tea kettles, ham broilers, gridirons, waffle irons, sugar kettles and Dutch ovens; also a variety of miscellaneous stove supplies.

The Gem Stove Caster.

Herewith is presented an illustration of the Gem ball bearing stove caster made by Kramer Brothers, proprietors of the Dayton Stove Repair Works, Dayton,



The Gem Stove Caster.

Ohio. Among the special points made by the manufacturers in connection with these casters are that they are made of solid cast iron and that they are so constructed that one man can place the caster under a stove, while the ball bearings make it run easily. The casters are furnished four to a set.

The Monarch Hub Range.

Those who cater to the building trade will be interested in the new Monarch Hub range, manufactured by the Smith & Anthony Company, 48-54 Union street, Boston, Mass. This range is made with 7, 8 and 9 inch covers, with 20 and 22 inch square ovens, that are thoroughly heated on five sides by means of an improved arrangement of sheet flues. The fire chamber is equipped with dock ash, reflex or plain grates, either of which may be readily removed without disturbing the fire brick. A large ash pan is also provided. It has a French interchangeable square sectional top provided with heavy nonwarping covers. The nickel parts can be readily removed without touching a bolt, which is very convenient for cleaning or blacking the range. It is made with a back rack, high shelf and hot closet. All of the ranges are provided with a low closet. The range is also made as a combination gas range, the gas attachment connecting at the oven end, having three surface burners on top, a 14 x 18 x 11 inch baking oven, and a 7-inch high broiling oven of the same size. This range is the subject of a special circular printed in two colors and illustrated with half-tone engravings. Four pages are devoted to cuts, and the other four to enumerating its many excellent features. Among the illustrations is a picture of a chariot race, in connection with which attention is called to the fact that "one more heat" has been added to the former good record of the "big four," which now becomes the "big five," by the addition of the Monarch Hub to the Beauty Hub, Magic Hub, Royal Hub and Model Hub, which are characterized respectively as "good, very good, better, best and perfection." This circular cannot fail to attract attention to the enterprise of the house and the excellence of their constructions.

THE SUFFOLK STOVE COMPANY, Suffolk, Va., are erecting an addition to their foundry.

Adjusting Stove Plate Prices.

No more interesting theme could be chosen for the discussion of the stove plate molder than that which deals with the methods of setting prices on work. It is one which affects his ability to make decent wages and calls for eternal vigilance on his part in order that his skill may receive a just and equitable reward. It cannot be said there is absolute uniformity in methods. Nearly every district has some features of similarity and others of wide difference. The subject in Eastern Pennsylvania has recently excited considerable discussion, says a writer in the *Iron Molders' Journal*, and before I illustrate a system in common use and another which some of us think is more equitable I will take the liberty of suggesting that stove platers who have had experience in other districts could advance the interests of our branch of the craft by taking up the discussion and explaining the methods followed by them, or those which have appealed to them as being the fairest and most systematic.

I will first deal with a system which is in considerable vogue, but which, nevertheless, I deem to have many unfair features, and call it Rule No. 1.

Rule No. 1.—Briefly stated, this rule premises that, having set the molding price of a piece of work belonging to a certain size of stove, the price of the same piece on all other sizes can be set by adding to or subtracting from that price $\frac{1}{2}$ cent for every inch of difference in length, breadth and depth according as the piece is larger or smaller than the original one.

Let me illustrate this by a few examples: We have a No. 6, No. 7 and No. 8 range bottom.

The No. 7 is 32 inches long and 25 inches wide, and the price has been set at 30 cents.

The size of the No. 8 is 35 inches long and 27 inches wide. Applying Rule No. 1, this bottom being 3 inches longer and 2 inches wider than the No. 7, its price would be $30 + 1\frac{1}{2} + 1 = 32\frac{1}{2}$ cents.

No. 6 is 29 inches long and 23 inches wide, so that its price by the same rule would be $30 - (1\frac{1}{2} + 1) = 27\frac{1}{2}$ cents.

In each of these cases it is presumed that the depth is the same.

Let us now take No. 14, No. 16 and No. 18 parlor heater bottoms, where the depth also would vary.

The No. 16 is 22 inches long, 19 inches wide and 4 inches deep, and the price 24 cents.

The No. 18 is 24 inches long, 21 inches wide and 5 inches deep; or 2 inches longer, 2 inches wider and 1 inch deeper. Its price by Rule No. 1 would therefore be $24 + 1 + 1 + \frac{1}{2} = 26\frac{1}{2}$ cents.

The No. 14 being 19 $\frac{3}{4}$ inches long, 17 $\frac{1}{4}$ inches wide and 3 inches deep, its price would be $24 - (1\frac{1}{8} + \frac{7}{8} + \frac{1}{2}) = 21\frac{1}{2}$ cents.

I will now describe a method which appeals to me as being more equitable, and illustrate its operation by working out the same examples. I will call it Rule No. 2.

Rule No. 2.—The molding price of a certain piece of work having been set, the price of the same piece of all other sizes of the stove would be as the ratio of its area or volume to that of the one set—that is, the area (or volume when the depth differs) of the smaller is to the area of the larger as the price of the smaller to the price of the larger.

Taking the first example—range bottoms, we find that the depth of flask required is practically the same in the several sizes, so that in computing what should be their relative prices it is not necessary to give the depth consideration, which can be done without altering the result.

To apply Rule No. 2 it is first necessary to determine the area of each bottom, which is done by multiplying the length by the breadth. Thus:

No. 6— $29 \times 23 = 667$ square inches = area.

No. 7— $32 \times 25 = 800$ square inches = area.

No. 8— $35 \times 27 = 945$ square inches = area.

The price of No. 7 has already been set at 30 cents—that is, a bottom containing 800 square inches is made for 30 cents, and dividing 800 by 30 we find, so to speak, that 26 2-3 inches of surface is molded for 1 cent. That being the case, then for every 26 2-3 inches contained in the bottoms of the other sizes 1 cent should be paid.

Let us see how this would work out:

No. 6 contains 667 square inches, its price would therefore be $667 \div 26 \frac{2}{3} = 25 \frac{1}{3}$ or 25.01 cents.

No. 8 contains 945 square inches, its price would therefore be $945 \div 26 \frac{2}{3} = 35 \frac{7}{16}$ or 35.43 cents.

In the case of the parlor heater bottoms depth is a varying quantity and instead of taking the measurements of the pattern itself, I would suggest that we determine prices by the size of flask required.

No. 16, whose price has been set at 24 cents, measures $22 \times 19 \times 4$. Allowing an inch of sand margin it would require a flask about $24 \times 21 \times 11$.

Placing the depth of the flask of No. 16 at 11 inches, that of No. 14 would be 10 inches and No. 18 12 inches. This includes cope and nowel.

To compute the volume of these flasks for purposes of comparison we multiply their length, breadth and depth together and the result will represent the volume in cubic inches. Thus:

No. 14— $24\frac{3}{4} \times 19\frac{1}{4} \times 10 = 4186.875$ cubic inches = volume of flask.

No. 16— $24 \times 21 \times 11 = 5544$ cubic inches = volume of flask.

No. 18— $26 \times 23 \times 12 = 7176$ cubic inches = volume of flask.

The price of No. 16 having been set at 24 cents, we find that a bottom whose flask contains 5544 cubic inches pays 24 cents. To determine what the No. 14 with a flask containing 4186.875 cubic inches would pay we proceed as follows:

A flask containing 5544 cubic inches pays 24 cents.

A flask containing 1 cubic inch pays $24 \div 5544$ cents.

A flask containing 4186.876 cubic inches pays $24 \div 5544 \times 4186.875 = 18.125$ cents.

By the same process it would be determined that the No. 18 would pay 31.06 cents.

Let us now recapitulate the prices of these two series under Rules No. 1 and No. 2.

Range bottom.	Price by rule No. 1.	Price by rule No. 2.
No. 6.....	27 $\frac{1}{2}$	25.01
No. 7.....	30	30
No. 8.....	32 $\frac{1}{2}$	35.43
Parlor heater bottom.	Price by rule No. 1.	Price by rule No. 2.
No. 14.....	21 $\frac{1}{2}$	18.125
No. 16.....	24	24
No. 18.....	26 $\frac{1}{2}$	31.06

Thus it will be seen that the prices of the smaller sizes under Rule No. 1 are in each case better than they would be under Rule No. 2, but the prices of the larger sizes just the reverse. Foundrymen may contend that Rule No. 1 is therefore just as fair on the whole as Rule No. 2. If there were always an odd number of sizes and the prices were first settled on the middle one, it might seem somewhat fair; but, in my opinion, it is not fair even then, as the men making the larger sizes will have a much poorer job than the men making the smaller sizes. But that is not the worst feature where Rule No. 1 is in operation. Foundrymen are shrewd and quick to take advantage of a situation; they therefore insist on pricing the smallest size first and in this way get considerably the best of the deal.

I don't know that this subject has ever been discussed in the *Journal* before, but it is a most interesting one to the stove plate molder, and a full understanding and interchange of views upon it will be of incalculable benefit. I have simply treated upon the subject of pricing other sizes from the price of one that has been set, but the whole subject of pricing is an important one and worthy of discussion. I realize that in pricing the first stove of any line good judgment and comparison with similar stoves must necessarily enter into the determination of its price. Difficulty of molding will necessarily influence one's judgment, and it is not to be expected that a set formula could be devised which would enable us to set a price on any piece of work by simple figuring, but there are important points that might with profit be made more uniform.

The New Jewel Steel Ranges.

The George M. Clark & Co. Division of the American Stove Company, Chicago, have made a new departure and are now bringing out a line of steel ranges designed for the use of coal and wood. They have issued a handsome catalogue of 16 pages, giving a description of the line and illustrating the special features. George M. Clark & Co. have hitherto devoted their attention to the manufacture of gas and gasoline stoves, but have for several years been studying the subject of the construction of coal and wood ranges, and believe that the line which they have brought out will meet with the approval of the stove trade. They have, of course, had a long experience in sheet metal construction in getting up their gas and gasoline stoves, and this experience has enabled them to get out a line of steel ranges which not only present an attractive appearance but also embody all strictly modern features.

The bodies of these ranges are made with triple walls. The outside wall is of heavy polished steel, the inside of heavy cold rolled steel, and between them is placed thick asbestos board. Where the heat is most intense the asbestos is from $\frac{1}{2}$ to $\frac{3}{4}$ inch thick. The sides are locked into square polished steel corner posts,

thus doing away with rivets and bolts. This makes a very strong construction, easy to take apart if necessary, but securing tight joints without cement or putty. The oven is made of one piece of heavy steel, which runs from the middle of the bottom, around overhead and back to the middle and there is double flanged, making it perfectly rigid. The oven door has no joints, being drawn from one heavy piece of steel. Two braces support the door when open, thus making it a strong stiff shelf. This door is heavily nicked and has the word "Jewel" in medallion form in the middle. The top of the range is made of very heavy steel, drawn down under great pressure, which makes a smooth, true, rigid, unbreakable and perfectly fitting top. The anchor plates in which the covers rest are supported by the range body, but not fastened to it, and are therefore free to expand and contract without producing the slightest strain on any part of the range. Duplex grates are used unless otherwise specified. By reversing this grate it can be used either for coal or wood and can be taken out of the range without disturbing the linings or water front. These ranges are furnished with an extension to the fire box for wood when ordered. Water fronts, pouch feed and reservoirs are also furnished when ordered. The reservoirs are made either left or right hand. The left hand reservoir has a cast iron galvanized iron pocket attached which projects through the left end of the range and the fire box lining. The right hand reservoir has two 9-inch copper pockets which project from the side of the reservoir and through the right wall of the range. Both are said to heat water quickly. These reservoirs can be removed for cleaning or permanently detached at any time. The Jewel steel ranges are made in nine sizes and styles and are furnished either in square form, or with high shelf or high closet.

ODD PLATES.

THE SIMPSON Gas Ranges, Hot Plates, Ovens and Cookers form the subject matter of a rather striking circular that is being distributed through the mails by the Simpson Stove & Mfg. Company, Pittsburgh, Pa. The circular is a folder printed on sage green paper in black and yellow, and the burden of its message is suggested in a picture of a man with a lantern, whose search for "the best" in gas cooking goods ends in the discovery of the Simpson products. The company announce that their Gas Ranges have sold so fast that a large new factory was made necessary. They are in this factory now and ready to take orders. Their catalogue will be sent to all interested upon application.

JAMES S. LAWRENCE, who, from his long connection with Sam. S. Utter, and recently with John P. Ley, is well known to the Stove trade in the vicinity of New York, has engaged with Peter Ewald, 2933 Third avenue, Borough of the Bronx, where he will utilize his thorough knowledge of the Stove Repair business and see that the orders of his old friends are filled not only promptly but correctly. Mr. Lawrence, in his new connection, places at the disposal of his many friends in the trade an enlarged, well arranged and well equipped Stove Repair establishment, which Mr. Ewald has spent several years in building up.

THE SMITH & ANTHONY COMPANY, Boston, Mass., have prepared a special advance postal card for the use of their salesmen, telling customers of the day that they are likely to visit them and show them the latest improvements contained in their new patterns. A feature of the postal card is a Hub Range mounted on wheels to represent an automobile, with the salesman sitting on the fire box, with his feet in the ash pit, using a poker to guide the progress of the Hub Range along the road to the trade. The postal card is one of the newest issues of the Government, with the national coat-of-arms on one side and a portrait of the late President William McKinley as the stamp on the other.

LYMAN S. BAKER, Camden, Mich., sends us a six-page folder devoted to the Economy Hot Air Furnace. This Furnace is constructed of sheet steel and presents a large heating surface, by means of a rectangular fire

and combustion chamber and four large flues which lead from the combustion chamber to an upper drum. The Furnace is of the self feeding type, although the magazine can be readily removed and wood burned in the furnace in case of necessity. The fire box is 24 x 24 inches in size.

A. C. BARSTOW, president of the Barstow Stove Company, Providence, R. I., sailed for Holland last Saturday on the steamer "Noordam," in company with his daughter. Mr. Barstow will make a trip down the Rhine and visit Venice and Switzerland during his stay abroad. He expects to be home in time for the fall Stove season.

W. H. POOLE of Crawfordsville, Ind., who has received a patent on a new Heating Stove, will erect, in connection with E. D. Bosworth, a factory for the manufacture of the Stove. The concern will also make Sheet Iron Stoves and Heaters, and will eventually embark in the production of Steel Ranges.

AMONG the many useful and unique novelties being distributed by the Michigan Stove Company of Detroit is a wire soap dish bearing the well-known Garland stamp. The idea seems to be that both the dish and the Stove are indispensable and the appropriate place for each is in the kitchen of a well equipped house.

THE KELSEY HEATING COMPANY of Syracuse, N. Y., inform us that C. F. Bock & Son, at Berrien Springs, Mich., have secured the contract for heating the Emmanuel College at that place, in course of construction by the Seventh Day Adventists, and will use Kelsey Warm Air Generators for the purpose. This is said to be the largest warm air heating contract ever made in Southern Michigan and reflects the high opinion held by the committee of experts who selected the heating system of the Kelsey Generator, also their opinion of the capacity of C. F. Bock & Son to install these Heaters in such a manner that every room in the large building will be comfortably heated in the coldest weather.

THE MICHIGAN STOVE COMPANY, Detroit and Chicago, are furnishing their agents with attractive "stickers," consisting of the Garland trade-mark printed in colors on gummed paper, which can be stuck in all sorts of places for advertising purposes. Many dealers use them on all packages which they send out.

A PARAGRAPH in *Printers' Ink* for July 30 states that Frederic W. Gardner of Chicago has purchased the sole advertising rights in the *Philistine* and *Little Journeys*, published by Elbert Hubbard of East Aurora, N. Y. As Mr. Gardner's address is stated to be the Fine Arts Building, we assume that he has already established an office there in which to conduct his business. His many friends in the Stove trade will be pleased to learn that he has formed such a desirable connection and will hope that he may find it not only pleasant but satisfactory in every other respect.

THE PENINSULAR STOVE COMPANY, Detroit, Mich., are sending out two four-page circulars, one devoted to the Peninsular Planished Steel Ranges and the other to the Peninsular Retort, a smoke consuming soft coal and slack burner Parlor Stove, illustrating its economy by means of two coal scuttles of different sizes. The circular shows half-tone engravings of the Retort Peninsular, having a hot blast for smoke consuming, and also the Parlor Peninsular, of similar construction. Both Stoves are designed to feed from the top, have an air tight ash pit, a top hot blast attachment with register and have bodies of finished planished steel, with castings of neat design and handsome nickel trimmings.

In another column the advantages of the Comet Steel Radiator and Stamford All Cast Iron Furnaces, made by the Stamford Foundry Company, Stamford, Conn., are presented, with broken views to show the construction.

THE *Crawford News* is a four-page sheet issued by the Walker & Pratt Mfg. Company, Boston, Mass., in the interest of the Crawford line of Ranges. The statement is made that the Ranges are readily controlled, are sure of operation through special flue construction, and possess other features that are increasing their popularity as a line for the dealer to handle.

THE UNITED STATES REGISTER COMPANY, LIMITED, Battle Creek, Mich., are calling attention to their Jones Side Wall Register. These Registers have double ventilated register boxes and are claimed to provide 50 per cent. more air space than other Registers. The company have made arrangements to be represented by leading houses in all the principal trade centers of the United States.

THE DIGHTON OAK FURNACE, made by the Dighton Furnace Company, Taunton, Mass., is made especially for burning wood and is also well suited for coal, coke or gas as fuel. These Furnaces are made in six sizes, with fire pots from 20 to 31 inches in diameter, and the Furnace in heights from 51 to 62 inches. The general construction is similar to the regular Dighton Furnace, which has become well known as a durable and economical heater.

THE PITTSBURGH STOVE & RANGE COMPANY, Plttsburgh, Pa., claim that the new Good Luck Steel Range is a construction that will fully meet the requirements of the most exacting user. It is built of polished blue steel and possesses all the latest improvements in Steel Ranges.

SOME of the points of merit of the Model Steel Ranges for 1902-1903 that are being offered by the Portsmouth Stove & Range Company, Portsmouth, Ohio, are the fire box, a patented oven door and the special style of damper, which, together with the special oven construction and the fact that these Ranges are made of the very best material and by the best mechanical skill obtainable are calculated to make this style of Range popular in the trade.

THE WHITE-WARNER COMPANY, Taunton, Mass., are calling for agents for their famous "Built to Bake" Household Ranges, which they are pushing with great success in different parts of the country.

THE INTERNATIONAL HEATER COMPANY, Utica, N. Y., are calling the special attention of the trade to their improved pattern of the Palace Queen Warm Air Furnace for coal or wood. The makers claim this Furnace to be a very efficient heater of original design. The arrangement of wrought iron tubes and large combustion space secures an unusually effective radiating surface. The Palace Queen Furnace is made with double feed doors, and one or both may be used as desired.

FURNACEMEN will soon be too busy to make up Pipe, Elbows, Wall Stack Fittings and Supplies. The Chicago Furnace Supply Company, 113-123 South Clinton street, Chicago, offer a wide line of such goods for every day and emergency use in their new catalogue.

THE WALWORTH RUN FOUNDRY COMPANY, Cleveland, Ohio, are making Furnace Rings of steel. This will doubtless be regarded by both manufacturers and dealers as a welcome improvement to Furnace construction. The ease with which cast iron Rings are broken has necessitated a care in packing that has been expensive. The new Rings obviate this expense. The company invite correspondence in reference to this new product.

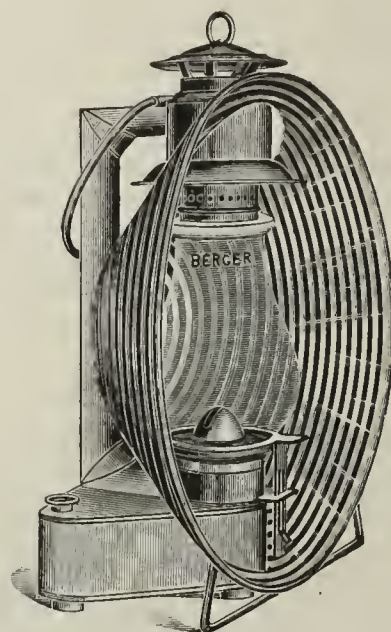
Michigan Retail Hardware Dealers' Association.

The programme for the eighth annual convention of the Michigan Retail Hardware Dealers' Association has just been issued. The meeting will be held at the Hotel Cadillac, Detroit, August 13 and 14. After routine business at the opening session on Wednesday forenoon, 13th, a paper, entitled "Organization, Local and General," will be read by A. Harshaw of Delray. At the afternoon session the annual address of the president and the reports of the secretary and treasurer will be presented. Papers at this session will be read by J. H. Whitney of Merrill on the subject, "My Faults in Business as Others See Them," and by John Popp of Saginaw, who will discuss the subject, "Would Mutual Fire Insurance Benefit Our Organization?" The Thursday morning session will be devoted entirely to the reading and discussion of the following papers: "Best Methods of Conducting a Retail Hardware Store," by R. G. Chandler of Coldwater; "Retailer's View of a Jobber Who Retails," by B. F. Schumacher of Ann Arbor; "Ad-

vice to the Association of How to Treat An Offending Manufacturer," by H. W. Weber of West Bay City. In the afternoon at the closing session Hon. B. A. Nevins will address the association on "Each Viewing the Other, Consumer versus Retailer." The programme is thus an interesting and instructive one, and with the outside entertainment which will be provided the coming meeting should be one of the most enjoyable in the history of the association.

Berger's Improved Tubular Headlight.

The Berger Mfg. Company, Canton, Ohio, make an extensive line of lanterns of unusual excellence. The accompanying cut shows Berger's improved tubular headlight, which is described as an absolutely safe, reliable, up to date light. This headlight is furnished with either plain or bull's eye globes, and has a No. 2 burner, 1-inch wick, 16-inch hood and 7-inch reflector. It is claimed that it will burn 48 hours in any kind of weather and gives a remarkable volume of light which is rendered specially intense by the concentrating powers of the reflector. It is adapted for lighting boat houses,



Berger's Improved Tubular Headlight.

bowling alleys, dairies, depots, driveways, engine rooms, factories, foundries, sheds, halls, lawns, livery stables, mines, platforms, saw mills, stores, traction engines, warehouses, or other places where a good light is required which will not be affected by strong breezes. The company invite those interested to send for their latest catalogue describing a large and varied line of lanterns, lamps, torches, &c.

"L. & G." Galvanized Ware.

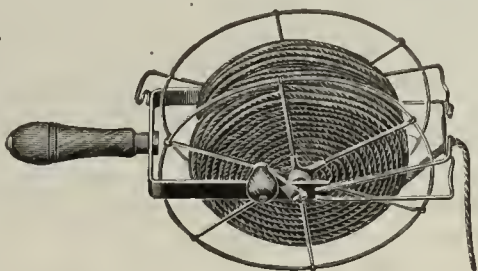
A new catalogue and price-list of their galvanized ware has just been gotten out by the Lalance & Grosjean Mfg. Company, 19 Cliff street, New York, with branches in Chicago and Boston, factories at Woodhaven, L. I., and rolling mill and tin plate works at Harrisburg, Pa. This price-list differs in form from the uniform size and get up which have become familiar in the company's former publications. It is 8 x 11 inches in size, printed on fine paper, and contains some 20 pages covering the entire line of galvanized ware produced by the concern. The illustrations are exceptionally good, and the general get up of the publication is attractive. Among the goods shown are L. & G. cups, measures, scoops, funnels, dippers, wash basins, dish pans, tea kettles, soap dishes, dust pans, chambers, watering pots, refrigerator pans, seamless water pails, fire pails, feeding pans, trays, foot tubs, wash tubs, chamber pails, garbage cans, ash cans, steel baskets and coal shovels. The last page presents views of the company's immense factories at Woodhaven and their rolling mill plant at Harrisburg, Pa.

Rochester Lamp Company.

N. E. Tallman, who has been in the service of the Rochester Lamp Company, 38 Park place and 33 Barciay street, New York, for a period of nine years in various capacities, has been made secretary of the company, succeeding Edward H. Kinney, the former secretary, who has resigned to become treasurer of the George H. Tay Company, San Francisco. Mr. Tallman will have direct charge of the details of the business at 38 Park place. It will be recalled that the Rochester Lamp Company, under the entirely new management of the past year or so following the death of Charles S. Upton, its founder and president, until his decease, established a well equipped factory of their own, with modern and improved machinery, at Twenty-fifth street and Tenth avenue, New York, where they are now manufacturing both the Rochester and New Rochester lamps of which they are sole owners and patentees in the United States and foreign countries, together with important and well introduced lines of blue flame wickless and odorless cook stoves, portable oil heaters, gas chandeliers, brackets, portables, lamp trimmings and specialties of this character covering a wide range, the product of which is almost as well known abroad as at home. It is the purpose of the interests now in charge of the property to energetically extend and broaden the market for the Rochester line, all the details of which manufacturing and marketing they now control, enabling them to execute promptly orders from both domestic and foreign buyers.

The Lawson Clothes Line Reel.

The accompanying cut represents a clothes line reel being put on the market by the Lawson Mfg. Company, Chicago, Ill. The reel is provided with a wire brake



The Lawson Clothes Line Reel.

controlled by the thumb of the hand which holds the handle, while the rope passes through a loop made by two wires extending from the axle beyond the circumference of the wheel. The pressing together of these wires catches the rope and holds it securely. The wheel is made of galvanized wire and the holder of galvanized iron with a wooden handle attached. The reel is referred to as being simple and practical.

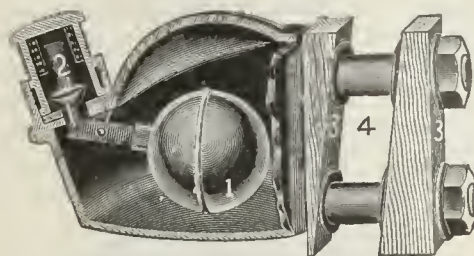
Bakers', Confectioners' and Hotel Goods.

A catalogue of 126 pages, copiously illustrated and attractively arranged, is being issued by the August Maag Company, 107 Sharp street, Baltimore, Md. This publication covers the line of bakers', confectioners', hotel and cooks' goods manufactured by the concern named. Among the goods shown are several styles of portable ovens, the Eureka oven illuminator, bakers' lamps for oil and gas, oven doors, dampers, grate bars, tiles, mixers, egg beaters, whisking machines, sifters, strainers, dough troughs, sieves, baking pans and a large variety of molds, cutters and other goods used by bakers and confectioners. Sweetmeat and candy furnaces form another line, followed by a complete stock of confectioners' tools and appliances. A great variety of goods for use in hotel and restaurant kitchens complete the catalogue. The company are also sending out a separate catalogue and price-list of 42 pages, showing their line of ice cream utensils and supplies. These embrace freezers, pails, beaters, ice breakers, molds, steel packing and shipping cans, ice cream refrigerators, paddles, scoops, strainers, spoons, ladles, measures, cream cans, water coolers and a number of other articles suitable for

the use of manufacturers and dealers in ice cream and kindred supplies.

The Dewey Stock Fountain.

On many farms and at some seasons the value of water is a matter of importance, and yet provision must be made for the stock to secure all that they desire without restriction. With a view of preventing a waste of water, and yet always having an ample supply at hand, the B. B. Mfg. Company of Davenport, Iowa, have put on the market the Dewey stock fountain. In Fig. 1 a sectional view of the automatic supply arrangement



The Dewey Stock Fountain.—Fig. 1.—Sectional View of Automatic Supply Cock.

is presented, from which it can be seen that by means of a ball cock the supply is automatically governed. Fig. 2 shows the attachment to the watering trough, two drinking founts being provided. As will be seen, the supply pipe is connected at D. Immediately upon the water in either of the founts being drunk by an animal the supply in the chamber with the ball float will be reduced, causing it to fall and open the supply valve. It is claimed that this fountain is especially valuable to hog raisers, as it provides a continually accessible supply of pure water which increases the fat and muscle and avoids the sickness due to impure water. These foun-

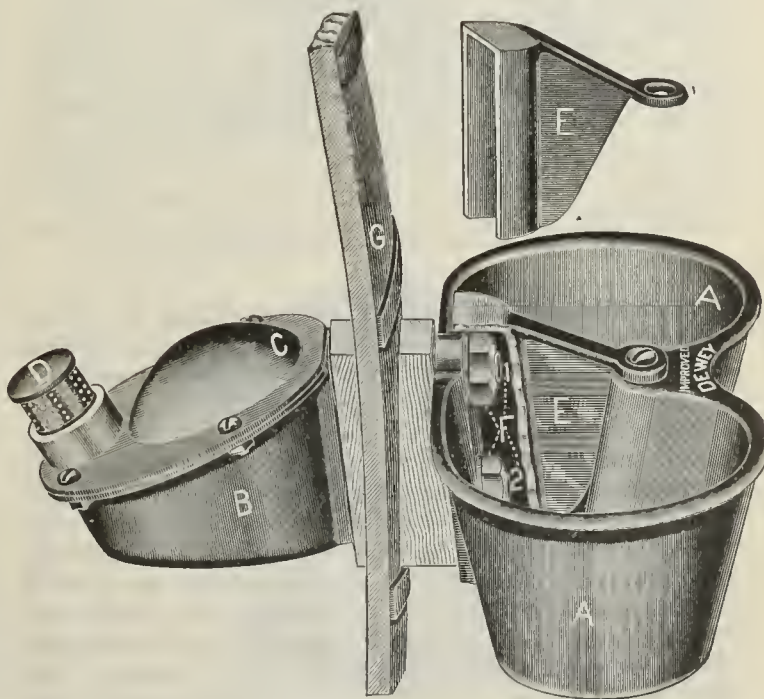


Fig. 2.—The Supply Apparatus Connected with the Fountains.

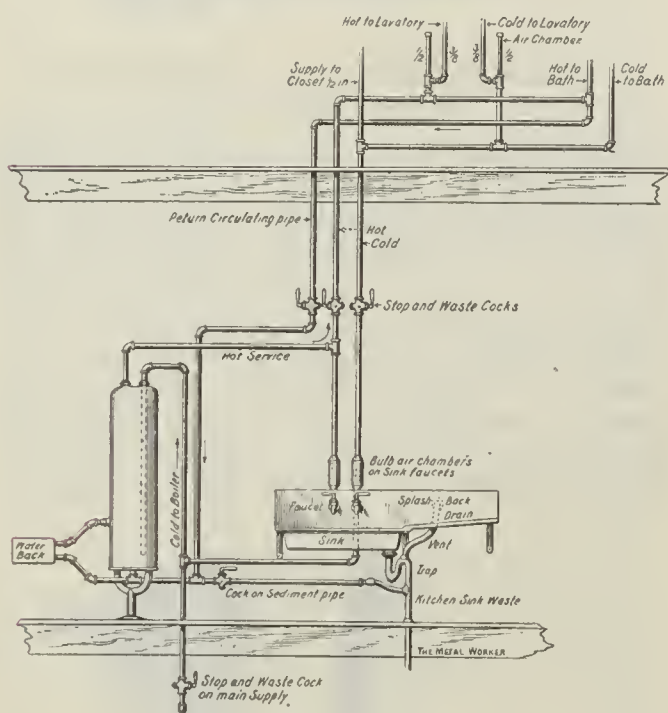
ains are said to have a large sale in the corn growing States, about a quarter of a million of them now being in use.

THE Fourth of July exhibit of George W. Myers, Stove and Hardware dealer, at South Bend, Wash., was voted to be the best in that city. In one of the show windows were potted plants surrounded by Stransky Enameled Ware, and in the other a miniature battle ship, made up of articles sold in the store. Two Symonds Saws constituted the hull, a Savory Roaster the deck-house, while Mouse Traps were used for turrets, with Cartridges for guns. The rigging was formed of Wire, and Brass Hose Nozzles represented the long range guns, with small Elbows serving as ventilators.

COLD AND HOT WATER SERVICE AND CIRCULATING PIPING.

BY HELMAR.

Circulating jobs are most necessary where the bathroom is remote from the kitchen. The circulating pipe is seldom installed where the bathroom is directly over the kitchen, as indicated in the accompanying sketch, but it provides a great convenience in any job—that of being able to draw hot water from the bathroom faucets almost instantly after opening them. Without the circulating pipe more or less water must be drawn, according with the length of pipe between the bathroom and the boiler, before the “dead” water has been forced out and enough hot water passed through to warm the pipe, which must be done before hot water can be had at the faucets. If the kitchen is in the basement it is usual to run the circulating pipe between the hot and cold pipes and place the cocks controlling the bathroom supplies over pantry sink, if convenient. If the stops on the bathroom supplies must be placed in the kitchen the



Cold and Hot Service and Circulating Piping.

location shown is the best. Stops placed high up are not convenient, but if the supplies are dipped to get them lower the circulation feature will fail under all ordinary conditions.

Bulb air chambers are shown in the sketch. These can be made by the plumber of lead or iron, or brass chambers may be purchased. Where a supply drops to a faucet, as shown, it is best to place the faucet at the lower end of the pipe, so that the faucet will drain the pipe empty. Plain pipe air chambers could be used in the job shown by placing a tee between two elbows for the hot faucet, letting the air chamber stand up outside the line, and branching the cold faucet in to match. This plan would place the faucet at the lowest point in the hot service, but the piping does not look well unless the splash back is in front of the pipes, as it always should be.

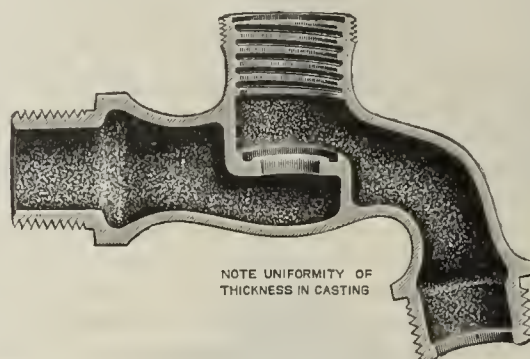
The circulating pipe is not often carried nearer to any of the faucets in the bathroom than is indicated in the sketch. It must have a stop and waste cock, which should, when practicable, be placed beside the stop and waste on the hot service, because they must always be turned at the same time and if separated the cock on the circulating pipe might be overlooked. The circulating pipe should connect to the lower pipe of the stove connection, or between the sediment cock and the boiler. It is usually one size smaller pipe than the hot service.

A dip in the hot service, such as is made to get stop cocks over the sink, is not always a barrier to circulation. If the hot service can be carried one or two stories higher than the bathroom and then return in the usual

way, the extra surface in the return pipe of the loop thus made will cool the water sufficiently to pull the water through the dip, if everything is favorable. The flow pipe of the loop should be insulated. A suction tee used in the stove connection where the circulating pipe joins will aid a job where a loop is used to induce circulation. Irregular work of this class is, however, as a rule, better left undone.

The New Departure Bibbs.

Many plumbers have confined themselves to the use of heavy brass goods in order to avoid trouble from thin places in bibbs, &c., due to lack of care in the details of manufacture. A new line of brass goods is being



The New Departure Bibbs.—Fig. 1.—Sectional View, Showing Uniform Thickness of New Departure Bibbs.

put on the market under the name of New Departure by the New Departure Mfg. Company of Bristol, Conn., whose selling agents are John H. Graham & Co., 113 Chambers street, New York. In Fig. 1 is shown a sectional view of a New Departure bibb which was sawed apart by the manufacturers in order to disclose its constructive merit. Special attention is drawn to the uniformity of the thickness of the bibb at the different points. A study of this bibb vindicated the company's idea of the necessity of perfecting the details of manufacture, so that the bibbs which are turned out by the concern should be uniform in thickness throughout. The sectional view presented in Fig. 2 shows a bibb such as the trade is familiar with. The variation in thickness shown at different points, which tends to cause breaking under a strain, cannot be overcome by mere weight of metal alone. It is due to the lack of

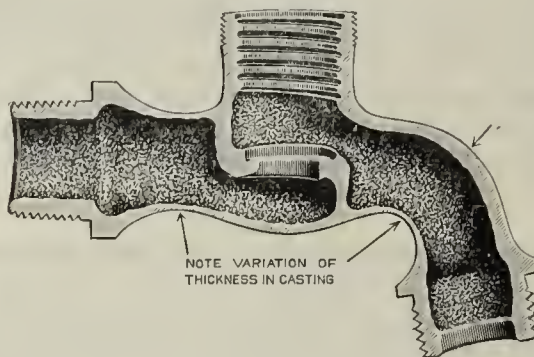


Fig. 2.—Sectional View, Showing Defective Construction.

care in the manufacture of brass goods brought out to meet the sharp competition that has existed in this branch of trade.

The manufacture of brass goods is an old industry with the New Departure Mfg. Company, but on taking up the manufacture of plumbers' brass goods they have carefully studied the details and now claim that they have the plant, facilities and experience for turning out brass goods made from the right material and of a uniform thickness, so that excessive weight and consequent cost is not necessary to secure a perfect and strong bibb or stop cock. The company have recently issued a 22-page catalogue devoted to the line of goods which they are already making, and which they announce that they intend to extend until their assortment is as complete as any line of plumbers' brass goods on the market.

Stealing Water.

Righteous indignation has evidently instigated the following observations in *Fire and Water* in reference to individuals and business concerns who, it appears, seem to have been taking for years without expense that which they knew the city expected them to pay for. That in some instances bribes were paid to dishonest officials aggravates rather than palliates the offense:

Now that the highest court in the State has decided that the authorities of the city of New York enjoy the right to cut off the water supply of persons who have been stealing water through unmetered pipes, and to keep it cut off until they pay for what they have stolen—as the amount may be estimated by the city officials—it is to be hoped that this common sense opinion will be acted up to and the law enforced without fear or favor. Such thieves belong to a very low order in the ranks of their calling, although unfortunately many of them are people who occupy a respectable position in life. In addition to their being obliged to refund with interest and costs the money of which they have robbed the city, their names should be published in every paper and in the most conspicuous part of every paper printed in New York. The practice would then soon cease as one at least unprofitable from a dollar and cent standpoint.

A recent decision of the Appellate Division of the Supreme Court makes it easier for the Commissioner of Water Supply, Gas and Electricity of New York to fight those who surreptitiously "convey" water from the city pipes for their own use without paying for it. The decision was the outcome of an application on the part of a hotel keeper for a mandamus to prevent the Water Department from interfering with his water supply. Last March one of the Commissioner's inspectors found that the water meter in the hotel had been tampered with; that several of the teeth in the cog wheels had been filed off; that the seal had been broken, and that the meter had been set back on several occasions. Commissioner Dougherty sent for the hotel keeper, who pleaded ignorance of the whole affair. The Commissioner told him that unless he paid his water bill in full his water would be cut off. Before the department had a chance to carry out its threat, however, the hotel keeper obtained a mandamus, which has just been set aside by the Appellate Division. The decision is of much importance to the Water Department, and will aid Commissioner Monroe materially in proceeding with the work of suppressing water frauds by giving him absolute power to cut the water off under such conditions.

The Aerated Fuel Process.

The Gilbert & Barker Mfg. Company of Springfield, Mass., and 82 John street, New York, issue a 64-page publication entitled "The Aerated Fuel Process." On opening the catalogue is found a plate page showing a fuel tank buried below the surface of the ground, for supplying the forges and other fires of a metal stamping establishment with gas from liquid fuel. An air compressor is shown for forcing the liquid fuel from the fuel tank to the burners in the various devices in which the aerated fuel is to be burned. General and sectional views are also presented of the company's aerated fuel burner, by means of which the fuel and compressed air are forced as a blast into a chamber where the articles to be heated are placed. The catalogue also shows fuel tanks and fuel packages, air compressors and automatic single oil pumps and receivers, as well as duplex oil pumps and receivers, designed for equipping establishments for forging, welding, japanning, enameling, annealing brass and copper, firing terra cotta kilns, burning sewer pipe, evaporating salt, cremating garbage and various other purposes. Forty pages contain testimonial letters which afford much interesting information as to the use to which the aerated fuel process can be put. The detailed description given of the operation and construction of the devices is also of much interest.

THE COLWELL LEAD COMPANY, 63 Centre street, New York, are inclosing with their communications circulars devoted to Smooth On, a Silicated Iron Cement for making tight joints in cast iron. The circular gives instructions for its use and contains many testimonial letters from those who have employed it on plumbing, piping, hot water piping, and for other purposes.

A New Sun Ray Boiler.

With a view to providing a boiler especially adapted to the needs of steam fitters who cater for the heating of the smaller type of residences the J. L. Mott Iron Works, 84-90 Beekman street, New York City, have put on the market the Sun Ray boiler, shown herewith. A general view of the boiler equipped with the steam trimmings is presented in Fig. 1. Another illustration of the boiler, given in Fig. 2, shows it with a portion of the trimmings removed, so that the construction can readily be seen. The boiler is in many respects similar to what



A New Sun Ray Boiler.—Fig. 1.—General View of Boiler with Steam Trimmings.

is known as the "dog house" type of boiler, which has become very popular for the smaller class of buildings. A feature of great convenience is its sectional construction, facilitating its introduction into a building through the ordinary doors and windows, and with comparatively little help, inasmuch as none of the sections are too large to be readily handled by the steam fitter and his helper. It is provided with an ash pit section, equipped with a labor saving grate of the approved type. This affords a substantial support for the sections of which it is composed. The push nipple construction has been adopted for connecting the sections, and the capacity of the boiler can be varied by the number of sections used. These goods are made in a variety of sizes, rated to carry from 250 to 750 square feet of direct

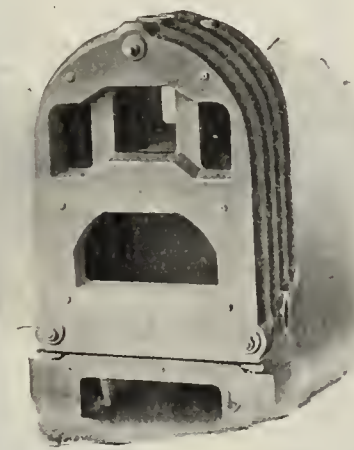
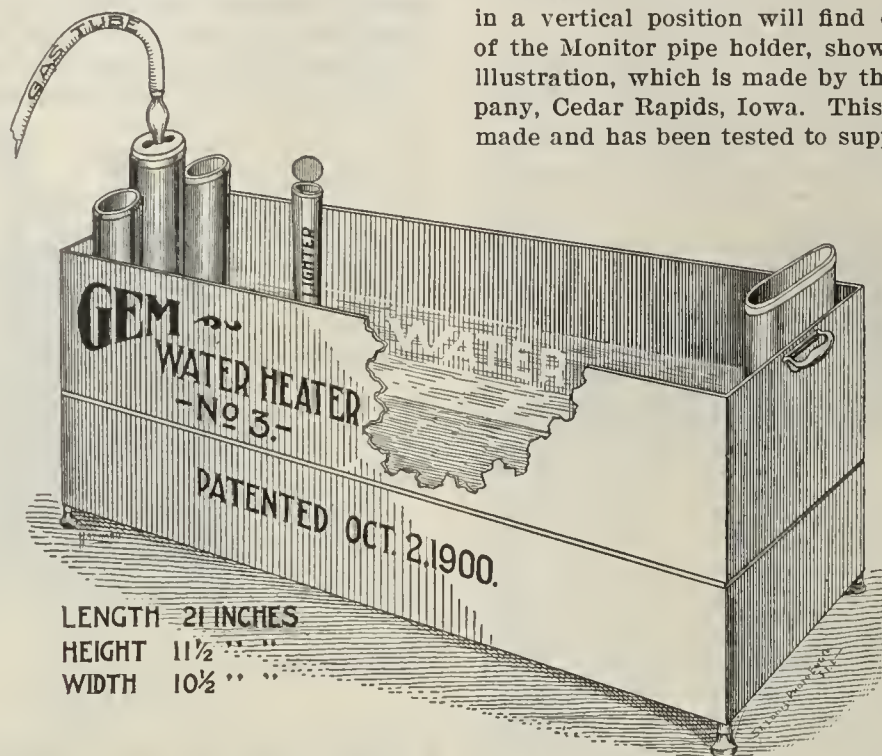


Fig. 2.—View Showing Internal Construction.

steam radiation, and having grates 19 and 20 inches wide, increasing 6 inches in length with the addition of each section. The boilers are rated to carry from 300 to 1250 feet of hot water radiation. They stand 52 inches high complete and have a water line 42 inches high. From this it will be readily seen that they are well adapted for low cellars. In the construction a large steam space and large water passages are provided, as well as a large fire surface, as the products of combustion rise into the outer side flues and pass to the front, where they reach the central flue and pass to the smoke outlet, whereby a maximum of heat is utilized before escaping. The company have recently issued a new catalogue giving full particulars in reference to their complete line of Sun Ray boilers and radiators.

The Gem Water Heater.

The variety of uses for which the Gem water heater is adapted has already given this device a considerable popularity, although it has been but recently put on the market by F. Schifferle, 1244 South Broadway, St. Louis, Mo. It consists of a sheet copper chamber arranged to



The Gem Water Heater.

be partly submerged in a body of water in a bathtub, so that the water can be heated by means of a gas burner which is inclosed within the walls of the heater, from which the products of combustion are carried off by means of a flue at one end. These heaters are made 21 inches long, 10 1/2 inches wide and 10 inches deep, having a total weight of only 16 pounds, so that they can be readily handled by women and children. When placed in the bathtub it is only necessary to attach the gas hose to the burner, turn on the gas and light the burner through the special tube for that purpose, when the water in the bathtub will be heated in a short time. It is claimed that 20 gallons of water can be heated in less than 20 minutes. The heater presents 500 square inches of heating surface and can be used for heating water in laundries, also for heating a quantity of water in any kind of a vessel where gas is available. The heaters are also arranged to be equipped with gasoline burners. The workmanship and materials are of the best character, and it is claimed that with ordinary use the heater is practically indestructible.

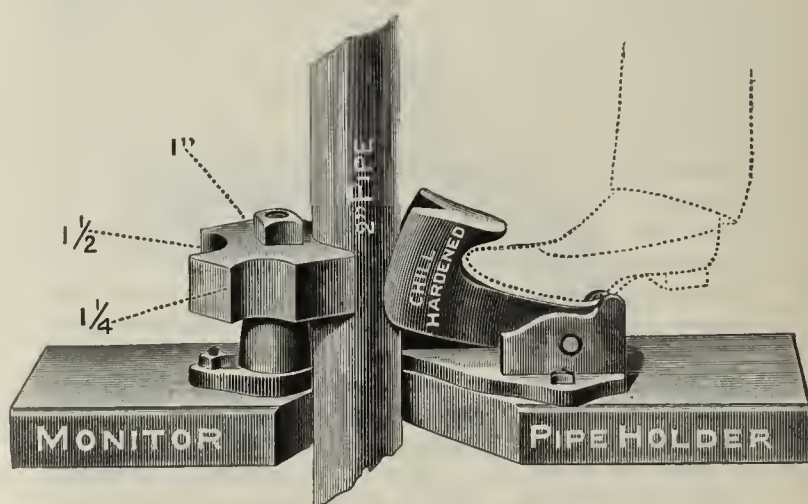
Contract for Large Fans.

A letter from the Buffalo Forge Company, Buffalo, N. Y., informs us that among the recent contracts awarded to the house is one of particular interest from the Continental Coal Company of Glouster, Ohio. This order is for three 250-inch fans, to be installed in their mine for the purpose of ventilating and exhausting fumes, smoke and the dangerous gases constantly arising in coal mines. The fans, which are almost 21 feet in diameter, are of the three-quarter housing type and of the special width of 72 inches. The slides are built of extra heavy steel plates and are thoroughly braced with angle irons of ample size to effectually prevent vibration. The blade wheels of these fans are of the usual centrifugal type. The radial blades or vanes, with backwardly curved tips, are supported by two spiders of wrought iron, tees springing from cast iron hubs, and are further stiffened by conical side plates. The fan shaft is supported independently of the housing by two Standard Buffalo self aligning chain oiling outboard bearings mounted on masonry pedestals. This plant, when completed, will be similar in many respects to

that of the Modoc Coal Mining Company, located at the same place, which was recently installed by the Buffalo Forge Company.

The Monitor Pipe Holder.

Those who make a specialty of pump work and all who have occasion to handle long lengths of iron pipe in a vertical position will find convenience in the use of the Monitor pipe holder, shown in the accompanying illustration, which is made by the Chandler Pump Company, Cedar Rapids, Iowa. This pipe holder is strongly made and has been tested to support a weight of 5 tons.



The Monitor Pipe Holder.

oughly tested by practical pump men who have occasion to lift pipes from shallow and deep wells for various purposes, and has been pronounced by them a thoroughly practical device, excellently well adapted for the purpose.

Of special interest, owing to the coal strike and the scarcity of anthracite fuel, is the new equipment of the Torrid Steam and Hot Water Heaters made by W. H. Drake, 36 Clinton street, Newark, N. J., as shown in his advertisement in another column. The claim is made that the Boilers will burn the finest coal successfully.

Bathtub Equipments.

The facility with which special sanitary devices can be manufactured and the reasonable prices at which they are sold has led to their being extensively used by the plumber, notwithstanding that he may feel some regret at having so little occasion to do the lead work, in which there was an opportunity for him to display his skill and in which he took a great deal of pride. The A. Y. McDonald & Morrison Mfg. Company of Dubuque, Iowa, have brought out a series of new devices



Bathtub Equipments.—Fig. 1.—The Twentieth Century Trap.

to aid the plumber in making bathtub connections. One of their principal fixtures is the Twentieth Century drum trap, shown in Fig. 1, which is made of cast iron, having a 4-inch outside diameter and with inlet and outlet tapped for screw joint connection. The top of the trap is reinforced around the outer rim and threaded to receive the nickel plated brass screw top, which extends beyond the diameter of the trap, so that it may rest on the floor, and which is provided with a $\frac{7}{8}$ -inch square nut, so that it can be readily removed with a

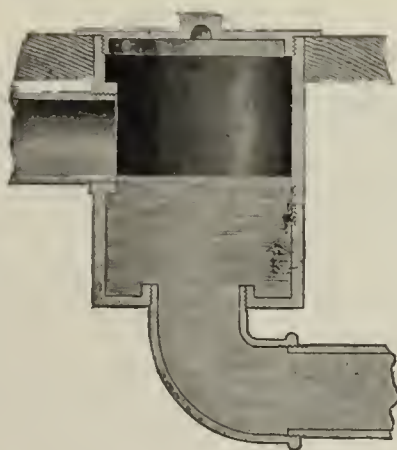


Fig. 2.—Sectional View of Trap.

wrench. A sectional view of the trap is given in Fig. 2, and its connection with the bathtub in Fig. 3. From these it will be seen that a body of water rests not only in the trap but in the pipe leading to it. This trap can be used in connection with any connected waste and overflow, and with different kinds of bathtubs.

In order to facilitate the connection of the waste and overflow with the trap proper the concern have brought out the special brass, nickel plated slip joint connection shown in Fig. 4. This is made 5 inches long, allowing considerable variation to accommodate different lengths of bathtub legs or unevenness in the flooring. A tight joint is made around its upper surface by means of a special form of tee that is used in connection with it.

Another specialty adapted for use with the supply and waste pipes to any plumbing fixture, which is shown in Fig. 5, consists of a new type of floor flange,

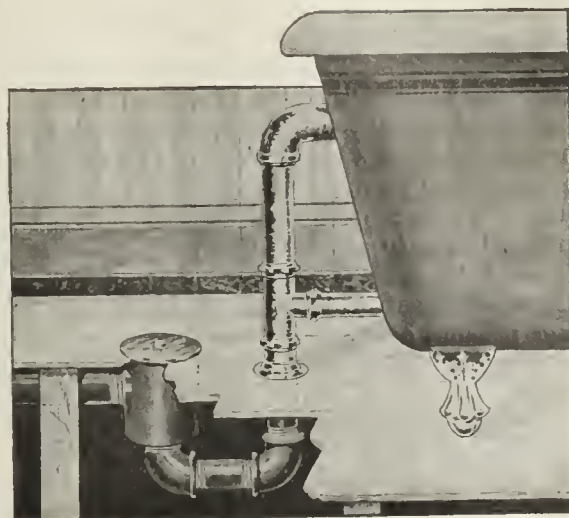


Fig. 3.—Showing Trap Connected with Bathtub.

which is threaded above and below, the lower portion being threaded for $\frac{1}{2}$ -inch wrought iron pipe, while the upper end is threaded for $\frac{1}{2}$ -inch and $\frac{3}{8}$ -inch brass, nickel plated or wrought iron pipe. The floor flange, as shown by the cut, can be used either as a direct pipe connection or with a slip joint for different sizes of pipe



Fig. 4.—A Slip Joint Connection.

on the upper end, so as to allow more variation in the height of the fixtures and avoid the necessity of cutting the pipe to the absolutely correct length. It is claimed that with these devices a bathtub can be connected by the plumber with less labor and less time than by the

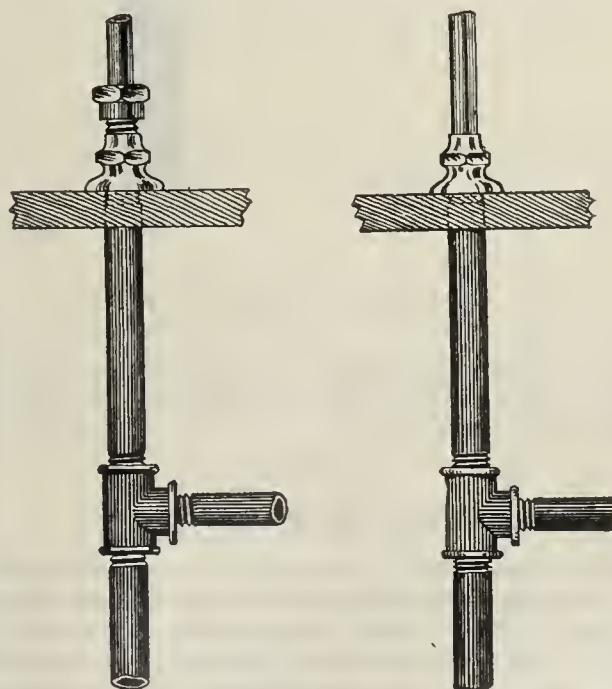
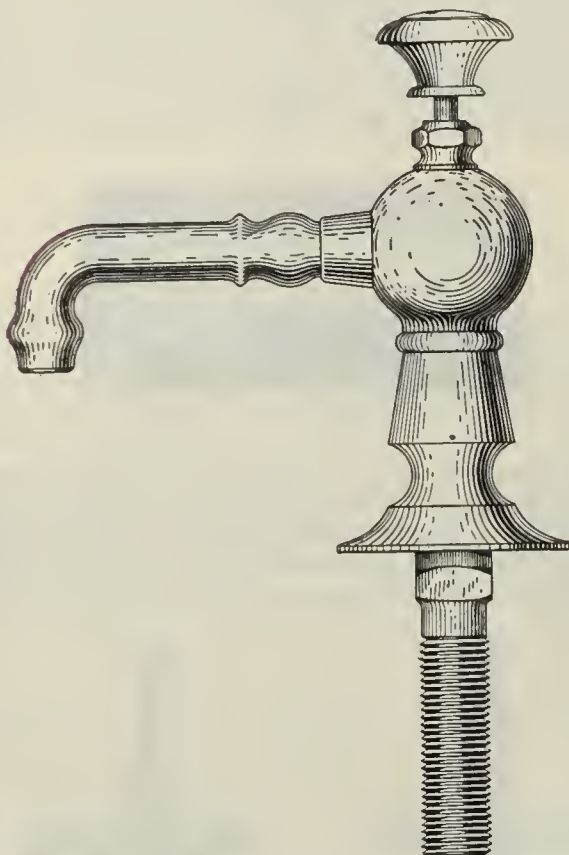


Fig. 5.—Floor Flange for Supply Pipes.

old methods with lead traps and piping. It also affords a character of equipment that cannot be destroyed by rats or dented by workmen or penetrated by the nails and screws of the carpenter. All of these advantages will be readily appreciated by the practical man. The company are distributing circulars illustrating and giving detailed description of these various bathtub equipments.

The Field Automatic Basin Cock.

The desirability of preventing any loss of water at the various fixtures of a plumbing system has led to the production of a number of self closing faucets. In the accompanying illustration we show one of the ball pattern basin cocks, which are made in a variety of styles by the Field Automatic Valve & Faucet Mfg. Company, 168 Dorrance street, Providence, R. I. These cocks are closed with water pressure, and as they close automatically and slowly they prevent water hammer. In their construction no springs are used, nor are there any stuffing boxes to get out of order. No stem packings are used, the only packing being in the valve seat, where it is arranged in a recess to avoid the wear of the water passing over it. It is claimed that the Field cocks will work readily in a battery, supplying a number of fixtures on cold water and hot water supplies alike. Another advantage they possess is that if the water is shut off from a building they will allow the water to drip from the pipes and prevent freezing. When the water is turned on again they will close as soon as the water pressure arrives at the fixture, thus preventing waste. These basin cocks have been thor-



The Field Automatic Basin Cock.

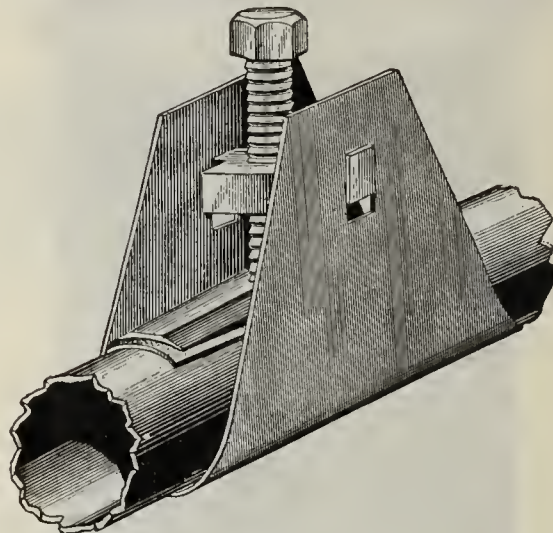
oughly tested in a number of large buildings and factories in New England, and are recommended as being first class in every respect.

American Spiral Pipe Works.

Spiral Rivet Pipe is the subject of a late catalogue of the American Spiral Pipe Works, 64 Wabash avenue, Chicago. The merits of this pipe are well known. It possesses strength, tightness, lightness and durability. It is supplied by the company asphalted, galvanized or double galvanized as may be desired. In both the asphalted and galvanizing the pipe is immersed in the fluid, thus securing perfectly coated inside and outside surfaces. If desired for pressure uses of either water or steam it is subjected to hydrostatic tests sufficient to allow for an ample margin of safety. The standard length of spiral rivet is 20 feet, but the asphalted pipe can be furnished in lengths up to 25 feet. It is furnished up to 16 inches in diameter and of different gauges of steel. The catalogue also illustrates and describes the connections used with pipe of this character.

Purdy's Pipe Clamp.

William Purdy, 222 Ninth avenue, New York, is the manufacturer of Purdy's pipe clamp, as here illustrated, which has been in use in the New York market for some time, but not introduced outside of that territory. These clamps are intended for use in emergencies for the immediate repair of leaks in all kinds of steam and water pipes, under any pressure, thus avoiding the immediate necessity of shutting down a plant for repairs, this device making it possible to repair the leak as soon as discovered, taking a more convenient time to cut out and



Purdy's Quick Repair Pipe Clamp.

renew a defective pipe. It is especially recommended for use by engineers, men in charge of pumping machinery, steamboat men, the janitors of buildings, and others using pipe for the purposes alluded to. The clamps are made in three sizes: No. 1 fits $\frac{1}{2}$ to $\frac{3}{4}$ inch pipe; No. 2, 1 to $1\frac{1}{2}$ inch pipe, and No. 3, 2 to $2\frac{1}{2}$ inch pipe. The strap is made of cold rolled steel, the No. 1 size being 18 gauge and the two larger sizes of 16 gauge. The steel strap of the smallest size is $4\frac{3}{8}$ inches long and $2\frac{1}{2}$ inches from top to bottom. In use the bolt and nut are removed, the strap slipped around the pipe, when the bed block covering a strip of rubber sheet backing is slipped over the leak and firmly secured in position by tightening the hexagonal head screw.

A Fine Plumbing System.

One of the finest systems of plumbing ever installed in a public building in this section of New England, says the *New Haven Record*, is that recently completed by the Buckingham-Routh Company in the new Malley Building, New Haven. On each of the seven floors of the building is fitted up a spacious toilet room, with four closets, slop sink, lavatory, &c. The partitions and wainscoting are all of Italian marble, the wood work being ash, finished in a dark color. The Durham system of plumbing has been used and the fixtures are mostly the Peck Bros. & Co.'s goods. In each of the rooms throughout the building is a lavatory, with marble bowl and open fixtures, and in the hall of each floor is a marble fixture for supplying ice water from a large cooling tank on the roof, as well as a water supply for fire purposes. Water is supplied from driven wells pumped into a 5500-gallon tank on the roof. The whole contract has been exceptionally well carried out and the owners have expressed much satisfaction with the manner in which the work has been done.

C. H. BROMLEY, New Britain, Conn., has just completed a contract for some first-class plumbing in a two-family house for Adam Zahnleiter. He also has completed contracts for George Unwin, Richard Malin and A. E. Morey. Among other contracts is one for E. Yates. Mr. Bromley reports a large increase in the summer's business and states that he is doing double the amount of work this season that he did last.

The Efficiency of Acetylene Generators.

The following information, taken from the *Plumber and Decorator* of London,, will be of interest to all who are using acetylene generators:

The Chief Inspector of Explosives recently called together a committee of scientists, expert in judging generators, and then issued an invitation to the trade to send their generators in to be tested and reported on. The report is now issued, and is—failing some further particulars—unsatisfactory. It is said that of the 46 generators tested all gave evidence of being safe; but while this is consoling, there appears to be a terrible injury done to some makers in the percentage of possible yield of gas that is published against each machine.

The committee say that a generator should have a 90 per cent. efficiency to be considered safe, this meaning that, with carbide yielding 5 feet of gas per pound the generator must give $4\frac{1}{2}$ feet for every pound used. This is not expecting too much, but 24—or more than half of the generators—failed to do it. And why?

A loss of gas between the generating chamber and the holder or burners can occur in two ways. One is by a bad form of generation (using too little water usually) causing intense heat and polymerization of the gas (with excessive production of impurities); the other is the absorption of acetylene by water. Any generators guilty of the former deserve to have their record published, but with the latter a proper allowance should be made and placed to the credit of the "percentage of possible yield" column. A number, if not the majority, of acetylene engineers consider that the gas should be cooled on passing from the generating chamber. This usually means providing a receptacle of water for the gas to bubble through. The gas is thus cooled, and all condensable products or vapors are removed. Water, however, absorbs acetylene; roughly speaking, a foot of water will absorb a foot of acetylene, but let it be clearly understood that once the water has its share it does not absorb the gas perpetually. After it is satisfied (saturated) the gas will pass through without loss, and the full yield will go to the holder and burners.

Among the 26 unfortunates the writer knows several to be provided with water expressly for this washing, and the question is: Was the water saturated with acetylene before the test or was a suitable allowance made? The report says nothing, and it is very hard on the 26, or a good many of them.

Pipe Coils.

Farwell & Rempe Company, Sacramento and Carroll avenues, Chicago, manufacturers of wrought iron pipe coils, announce that with their increased facilities they are enabled to meet the wants of customers with a greater degree of promptness. Their illustrated catalogue of coils, manifolds, ammonia fittings, &c., is of special interest to manufacturers of ice and refrigerating machines, feed water and car heaters, as well as to cold storage houses, chemical works, blast furnaces, soap factories, &c. The catalogue is provided with an index for ready reference, and is reinforced by a number of valuable tables, specially designed to the needs of their customers.

PROF. WILLIS L. MOORE, Chief of the United States Weather Bureau, at Washington, D. C., has recently perfected an apparatus for cooling buildings by which the warm air is taken from the outside of a building and in passing through the machine is dried, washed and cooled before it enters the room. The whole operation is dependent upon the difference in the specific gravity between warm air and cool air. The machine is said to work automatically, faster when the air is hot and more slowly as the temperature falls. The apparatus is filled with a cooling mixture and may be readily mistaken for a large stove. It has been in experimental operation for some time, but the mildness of the summer weather has interfered somewhat with its exploitation.

Heating and Plumbing Notes.

THE Detroit Association of Master Plumbers have lately fitted up a large room in the Wayne County Savings Bank Building, Detroit, where they hold their regular meetings and the members come together daily for the consideration of matters pertaining to their business. We are glad to state that *The Metal Worker* is held in sufficiently high esteem to be kept on file in the rooms.

MANHATTAN BRANCH of the Association of Master Plumbers of New York City have arranged to hold their annual outing and clambake at the Hotel Crocheron, Bayside, L. I., on Thursday, August 28. The committee in charge consists of T. J. Cummins, Alex. Bryant, John Rinehan, T. J. Tuomey, J. W. O'Brien, T. F. Gaynor and A. W. Reynolds. Tickets can be obtained from A. W. Reynolds, treasurer, 2110 Broadway, or from any of the committee.

J. W. ANDREWS of Tremont, Neb., bid \$1760 and secured the contract for equipping the Carnegie Library building in that place with a steam heating and lighting system.

J. J. FITZGERALD, clerk of the Board of Education of Waterbury, Conn., will receive bids until August 11 for plumbing, heating and ventilating the new school building to be erected in the Washington Hill district.

W. D. HALL AND JOSEPH A. MURRAY, representing Joseph L. Dunn & Co. of Wilkes-Barre, have been in Lancaster, Pa., preparing plans for the steam heating plant in which capitalists of Wilkes-Barre and the Wyoming Valley are interested.

THE following journeymen have been granted plumbers' licenses by the Plumbers' Examining Board of Bridgeport, Conn.: Martin Fitzgerald, D. J. Farrell, Edward Killian, John McRean, Thomas Constant, Ray Alvord, William Madigan, John McCormick and C. D. Reiley. Three others failed to pass the examination.

EDWARD H. KINNEY, who for about 20 years had been identified with the Iron Clad Mfg. Company, New York, and who for a brief period has been secretary of the Rochester Lamp Company, New York, has been chosen treasurer of the George H. Tay Company, San Francisco, Cal., and left for the Pacific Coast July 29, to assume the duties of his new office, which will be in the way of joint management of the company with Francis J. Baker, secretary. The George H. Tay Company have long been favorably known as wholesale dealers in Plumbers' Supplies, Stoves, Ranges and kindred merchandise.

G. JAGER has recently connected himself with the Charles Graham Chemical Pottery Works of Brooklyn, N. Y., and will visit the plumbing trade in the interest of their Laundry Tubs, Sinks and other Sanitary Earthen Ware.

JAMES T. KAY, Meriden, Conn., is doing the plumbing at the Meriden Hospital, and also has a contract for the plumbing and gas fitting in the First Congregational Church at Naugatuck. He has just completed the plumbing in the Mohican Building, New London.

THE ELM CITY ENGINEERING Co. of New Haven, Conn., describe their Magnetic Separators in a pamphlet. A point of superiority of this machine is that the magnetic cylinder is always of the same size, a point that is very essential to the satisfactory working of the Separator. All parts of the machine are made in the most careful manner, and the best material only enters into its construction. The machine has a capacity of from 3000 to 10,000 pounds of stock in ten hours according to the material used. It is designed to operate at a 110-volt circuit and consumes 4.3 amperes.

ANDREWS & CREEDON of Hartford, Conn., have the contract for installing a Royal Hot Water Heater and 2500 square feet of New York radiation in the Home for Incurables in that city.

THE contract for heating and ventilating the new Court House at Norristown, Pa., has been awarded to Miller & Sons at their bid of \$14,000. The contract for the lighting was awarded to E. P. Strong & Co. at their bid of \$7061.

EVANS, ALMIRALL & Co., 45 Dey street, New York, bid \$8000 and secured the contract for a hot water heating system, to be installed in the Clark Library, at Worcester, Mass.

THE FOSTORIA HEATING COMPANY, recently organized at Fostoria, Ohio, with \$100,000 capital stock, will commence immediate work on the installation of a Yaryan heating system.

KLOCKSIN & SENIOR, Summit, N. J., have the contract for plumbing and heating a fine residence for J. Long and another for A. A. Henning.

J. W. ARBOTT of the Standard Sanitary Mfg. Company of Pittsburgh has gone to Europe.

AN ordinance has been adopted at Des Moines, Iowa, requiring the inspection of all plumbing work.

THE foundry of the West Superior branch of the United States Cast Iron Pipe & Foundry Company will resume operations about August 1, it having been closed down for repairs and to await the disposal of a large stock of Sewer and Water Pipe now in the yards of the company. The machinery is being cleaned and repaired and the plant is being put in condition to enable it to continue operations for at least a year's run.

THE strike in the plumbing trade at Richmond, Va., has been adjusted, largely through the influence of Morgan R. Mills, president of the Master Plumbers' Association, and William J. Spencer, the general organizer of the Journeymen Plumbers' Union, from the Chicago office. A feature of the settlement is the appointment of a special advisory committee, composed of members from the Master Plumbers' Association and from the Journeymen's Union, who will arrange for a new agreement at the expiration of the present agreement, which holds for one year.

WILLIAM R. C. CORSON, consulting electrical engineer, 440 Capitol avenue, Hartford, Conn., is supervising the installation of power and heating plants for the Pratt & Cady Company and the Sigourney Tool Company, both in that city.

NATHANIEL MORTON, who has been treasurer of the Bradford Joint Company, Plymouth, Mass., since their incorporation in 1871, died at his home on July 18, aged 71 years. Mr. Morton was a man of rare public spirit and his death is universally lamented.

THE Supervising Architect at Washington, D. C., will receive bids until September 10 for plumbing, heating and lighting the Post Office at Anniston, Ala.

THE KEYSTONE BOILER & RADIATOR COMPANY, Huntingdon, Pa., who some time since purchased the old works of the Huntingdon Car Mfg. Company, with several acres of land, have increased their force and extended their plant to meet the demands made for the Keystone Boiler, which has met with a favorable reception wherever it has been investigated by heating contractors.

THE Supervising Architect, Washington, D. C., will receive bids until August 25 for heating and electric wiring an extension to the United States Post Office and Custom House at Frenchman's Bay, Ellsworth, Maine.

J. T. KERR, Dover, N. J., is installing a No. 92 Royal Steam Boiler, made by the Hart & Crouse Company, Utica, N. Y., in the Richards Block, at Dover, and is rearranging a steam heating system.

THE UNITED STATES HEATER COMPANY, Detroit, Mich., are said to have recently purchased a large piece of ground adjoining their present works, on which they are prepared to erect an important addition to their present plant.

R. J. MOONEY, Summit, N. J., is installing a No. 46 Royal hot water heating system in the rectory of St. Teresa Church, using 800 feet of New York Radiation.

THE CELLUVARNO COMPANY, Newark, N. J., make a specialty of covering water closet tanks and seats, bathtub seats and all wood work or brass work used in bathrooms with a patented preparation which, it is claimed, remains white and hard at all times. We are advised that the company have recently reduced their prices for treating tanks and seats in this manner. They are well

equipped to do this work, the seats and tanks being furnished by the owner.

S. FAITH & Co. of Philadelphia, Pa., bid \$127,300, which is said to be the lowest bid received by James Knox Taylor, Supervising Architect of the Treasury Department, for installing the mechanical equipment, heating and ventilating system in the United States Mint at Denver, Col.

W. R. MILLOWAY, 519 South Ohio street, Sedalia, Mo., has instituted proceedings against what he alleges is an organized attempt to drive him out of the plumbing business and prevent him from securing supplies.

ENGINEER GREGORY of the Yards and Docks Department at Portsmouth, N. H., has commenced work on the plans for the proposed central heating station to be inaugurated there. The heating will be done by means of hot water circulation.

WORK has been begun on the new foundry of the Barberton Brass Valve & Fittings Company at Barberton, Ohio.

ABOUT 3500 tons of Wrought Iron Pipe were forwarded in June from the various mills of the National Tube Company, through Eastern ports, for shipment to various parts of the world, principally to Continental Europe.

THE WEST PLAINS PLUMBING COMPANY, West Plains, Mo., are plumbing the building of T. B. Kilpatrick at that place.

R. H. CARPER of Salem, Va., has secured the contract for plumbing three barracks at the National Home for Disabled Volunteer Soldiers at Johnson City, Tenn., involving \$20,000 worth of work. He also has a similar contract at Blacksburg, Va., and for a residence in the same place.

PORTER & Co. bid \$4000 and secured the contract for heating the Central High School building and the Longfellow School at Minneapolis, Minn.

New Firms and Changes.

THE AMERICAN CARBOLIDE COMPANY of New York have been incorporated with a capital stock of \$1,000,000 to manufacture Calcium Carbide, Carbolide and similar products. The directors are Charles A. Towne and Walter G. Hudson of New York, Charles E. Hartman of Boston, William Nicholson and W. M. Hoffman.

F. POWERS of Chicopee Falls, Mass., will occupy one of the new rooms in the Arcade Building at New Milford, Conn., as a plumbing establishment. As he is just entering the business, Mr. Powers will be glad to receive catalogues and prices of plumbing goods.

THE PHILLIPS HEATING COMPANY have been incorporated at Augusta, Me., with a capital of \$50,000 to install all kinds of heating and ventilating systems. F. L. Dutton is president and E. F. Whittum treasurer.

AN error was made in the amount of the capital of the American Valve & Meter Company, Cincinnati, Ohio, in a recent issue of *The Metal Worker*. The new company are a consolidation of the Cincinnati Meter Company and the John N. Poage Mfg. Company, and have a capital of \$330,000. They will make Water Meters, Water Columns, Tank Fixtures, Valves and Railway Supplies. N. Paul Fenner, Jr., is president and general manager, William Porteous vice president and superintendent and Frank M. Foster secretary and treasurer.

THE FOSS VALVE MFG. COMPANY are a new industry in the old Crawford factory, at Dover and Warren streets, Brockton, Mass., who will manufacture the Valves and Faucets patented by Walter O. Foss. Clarence E. Anglim is manager of the concern.

Some metals have a very much more pronounced odor than others. The odor of tin, especially when newly cut, is unmistakable, but it is a moot point whether gold and platinum have any odor that could be recognized by human olfactory nerves. Of the rarer metals uranium and its compounds give the strongest odor. Uranium is always giving off what are known as the Becquerel rays, consisting of streams of excessively minute "corpuscles."

Where Our Manufacturing Exports Go.

The frequently asked question, "What becomes of our exports of manufactures?" is now definitely answered by the Treasury Bureau of Statistics. While it has been practicable to show the countries to which any given article is sent in any given year the figures of the Bureau have not formerly been so adjusted as to render it practicable to determine what share of the total exports of manufactures was sent to a given country or division of the world; or, in other words, the location of the principal markets for American manufactures. These facts are now shown by a series of tables compiled by the Bureau. They show that during the year 1901 52 per cent. of the manufactures exported went to Europe, 23 per cent. to North America, 6.6 per cent. to South America, 8.2 per cent. to Asia, 7 per cent. to Oceanica and a little less than 3 per cent. to Africa. The total value of manufactures exported to Europe in 1901 was \$215,000,000; to North America, other than the United States, \$96,000,000; to South America, \$27,000,000; to Asia, \$33,700,000; to Oceanica, \$29,000,000, and to Africa, \$10,500,000.

The largest item in each case was iron and steel manufactures, Europe taking them to the value of \$43,812,323; North America, \$13,518,293; South America, \$8,754,800; Asia, \$8,992,967; Oceanica, \$8,371,602, and Africa, \$2,368,635. Refined oils, copper, leather and agricultural implements, in the order given, were, next to iron and steel, the most important manufactured articles exported from the United States in 1901.

In conjunction with the tables showing the distribution of manufactures by countries and divisions, the Bureau of Statistics has prepared a statement which shows for the first time the exportation of manufactures in each year, from 1790 to the present time. In 1790 the total amounted to a little over \$1,000,000 and formed 6 per cent. of the total exports; in the decade from 1791 to 1800 exports of manufactures averaged about \$2,000,000 per annum; in the decades ending with 1810 and 1820, respectively, they averaged about \$3,000,000 per annum and formed about 7 per cent. of the total exports; in the decade 1821-30 they averaged about \$6,000,000, and never reached as much as \$10,000,000 prior to 1840. By 1850 the exports of manufactures had reached \$17,500,000, and in 1860 for the first time touched the \$40,000,000 mark, but did not cross the \$50,000,000 line until 1870, when they amounted to \$68,279,764. In 1877 they for the first time crossed the \$100,000,000 line, the total for that year being \$122,577,652. In 1896 they crossed the \$200,000,000 line, the total for that year being \$228,571,178; in 1899 the total was \$339,592,146, and since 1900 the exportation of manufactures has constantly exceeded \$400,000,000 per annum.

Process of Galvanizing.

In an article in the *Journal of the Franklin Institute* Prof. W. J. Richards says that the trade name "galvanizing" relates to the coating of iron with zinc. In order to do this the iron article to be coated must first be surface cleaned from all dirt and other impurities, so as to present a perfectly clean metallic surface. If any dirt, scale or oxide remains on the surface the zinc will not adhere to that part and imperfect work will be the result. This cleaning is done by immersing the article in a bath of sulphuric acid and water, washing well in water, plunging in hydrochloric acid for a short time and drying. The article is then put into the bath of molten zinc. If sheets of similar articles that will not retain much water are being coated the drying may be dispensed with to advantage. The galvanizing tank, or bath, as it is called, is of necessary size for the articles to be submerged, varying from $\frac{1}{2}$ to 30 tons capacity.

This tank is usually oblong in shape and is divided on its surface by a longitudinal partition into two parts. On one side of the division a suitable flux is placed, which will dissolve the oxide of zinc on the surface or prevent its formation. The flux used is ammonium chloride, or, in trade parlance, sal-ammoniac. The other side of the bath is kept clean by continually skimming off the oxide of zinc as fast as it forms. In this skim-

ming of the pot considerable shot metal is unavoidably removed with the oxide.

The side with the sal-ammoniac soon becomes covered with a thick black scum which consists of the dissolved oxide, which has partly decomposed the ammonium chloride and formed a double chloride of zinc and ammonium. The sal-ammoniac must be fed continually to the top of the pot so as to keep the surface of the molten zinc clean and free from oxide, or else the oxide will adhere to the iron surface and affect injuriously the finished product by leaving spots uncoated with zinc.

By the continued addition of sal-ammoniac the scum accumulates on the top of the pot and soon gets too thick for the workman to push his plates or other articles through, so a portion is removed from time to time. This yields on one side a waste called sal-ammoniac skimmings and on the other side zinc oxide or zinc skimmings.

Yet another by-product is made that is called zinc slab dross. This is formed by the continued washing away of a portion of the iron that is being galvanized, for zinc in a molten state will alloy with iron, so that as the iron becomes as hot as the bath its surface begins to dissolve in the zinc. If from accident or design a piece of iron is left in the bath after this dissolving process commences it will in time be entirely dissolved. Bolts, nails, castings, &c., are often found in the bottom of the bath which are all, as it were, eaten away or dissolved in the zinc.

This addition of iron to the bath forms an alloy of iron and zinc that is of greater specific gravity than the zinc itself, and which falls to the bottom of the bath. If the bath is run hot it collects very fast, but under ordinary circumstances a bath of the usual size for pipes or sheets will make a ton of this dross in a week.

In order to have depth enough to do the work properly the dross must be removed. This is usually done every Saturday afternoon. A large spoon is used, perforated with holes to allow the zinc to drain out, and the semifluid dross is pasted into moulds, smoothed off with a shovel, and is then the slab dross of commerce.

Pig Iron Production for Six Months.

General Manager James M. Swank of the American Iron and Steel Association publishes in the *Bulletin* of July 28 complete statistics of the production of all kinds of pig iron in the United States in the first half of 1902. These statistics are complete, as every manufacturer of pig iron in the country, without a single exception, responded to the request for this information.

The total production of pig iron for the first six months of 1902 was 8,808,574 gross tons, against 7,674,635 in the first half of 1901 and 8,203,741 tons in the second half of 1901. This shows an increase in production in the first half of 1902 over the preceding six months of 604,833 tons. The total production of the 12 months ending June, 1902, amounted to 17,012,315 tons. It is possible that the production of the year 1902, notwithstanding the interruption caused by the anthracite strike, may exceed 18,000,000 tons. The production of pig iron by the United States in the first half of 1902 was, in round figures, 1,000,000 tons greater than the production of either Great Britain or Germany for the whole year 1901.

The production of Bessemer pig iron in the first half of 1902 was 5,105,932 gross tons, against 4,582,187 tons in the first half of 1901 and 5,014,606 tons in the second half of 1901. The production of basic pig iron in the first half of 1902 was 1,053,274 gross tons, against 645,105 tons in the first half of 1901 and 803,745 tons in the second half of 1901. The production of charcoal pig iron in the first half of 1902 was 186,098 gross tons, against 194,231 tons in the first half of 1901 and 165,916 tons in the second half of 1901. In addition there were produced in Tennessee in the first six months of this year 6004 tons of pig iron with mixed charcoal and coke.

J. D. OWENS, dealer in Hardware, Stoves, Agricultural Implements, &c., Cameron, W. Va., has removed his business to new quarters.

PATTERN FOR TIN CHURN.

A correspondent at Clarendon, Texas, asks us to publish the patterns for a 3-gallon tin churn. In Fig. 1 is given a perspective view of a churn, in which A is the body, B the inverted cone cover, C the handle of the churners and D the churners, while *a* and *b* show the perforations in the cross pieces. For the patterns for the various pieces proceed as is shown in Fig. 2, which is applicable to any size of churn. First draw the center line A B, upon which lay off the height of the churn, as shown by *n m*. Then lay off the top and bottom diameters, F E and D C respectively, and extend the sides D F and C E until they meet and intersect the center line at *b*. Now draw the bottom G, which make slightly concave, seaming it to the body at *a* and *a* and raising the bottom G on the wood block with the raising hammer. Now draw the cover H I J K in the form of an inverted

scribe arcs in X, as shown by K' J' and 1' 1". Now take the stretchout of the semicircle H 4' I, and starting at any point, as 1' on the outer arc in X, step off twice this amount, as shown from 1' to 7' to 1". From points 1' and 1" draw radial lines to *c'*, intersecting the inner arc at K' and J'. Then will K' J' 1' 1" be the pattern for the cover, with laps allowed for double seaming.

W V in diagram Y shows a perspective of one of the churners, with double edges bent at *d* and *e* to stiffen the same. Holes are punched into the top, as shown, while X is the center hole, to which the metal tube C, in Fig. 1, is fastened. A wood bottom should be fitted under the bottom G in Fig. 2 to secure stiffness.

The Proposed Tin Plate Wage Reduction.

By Monday next it will be known definitely whether the employees of the tin plate mills will accept the pro-

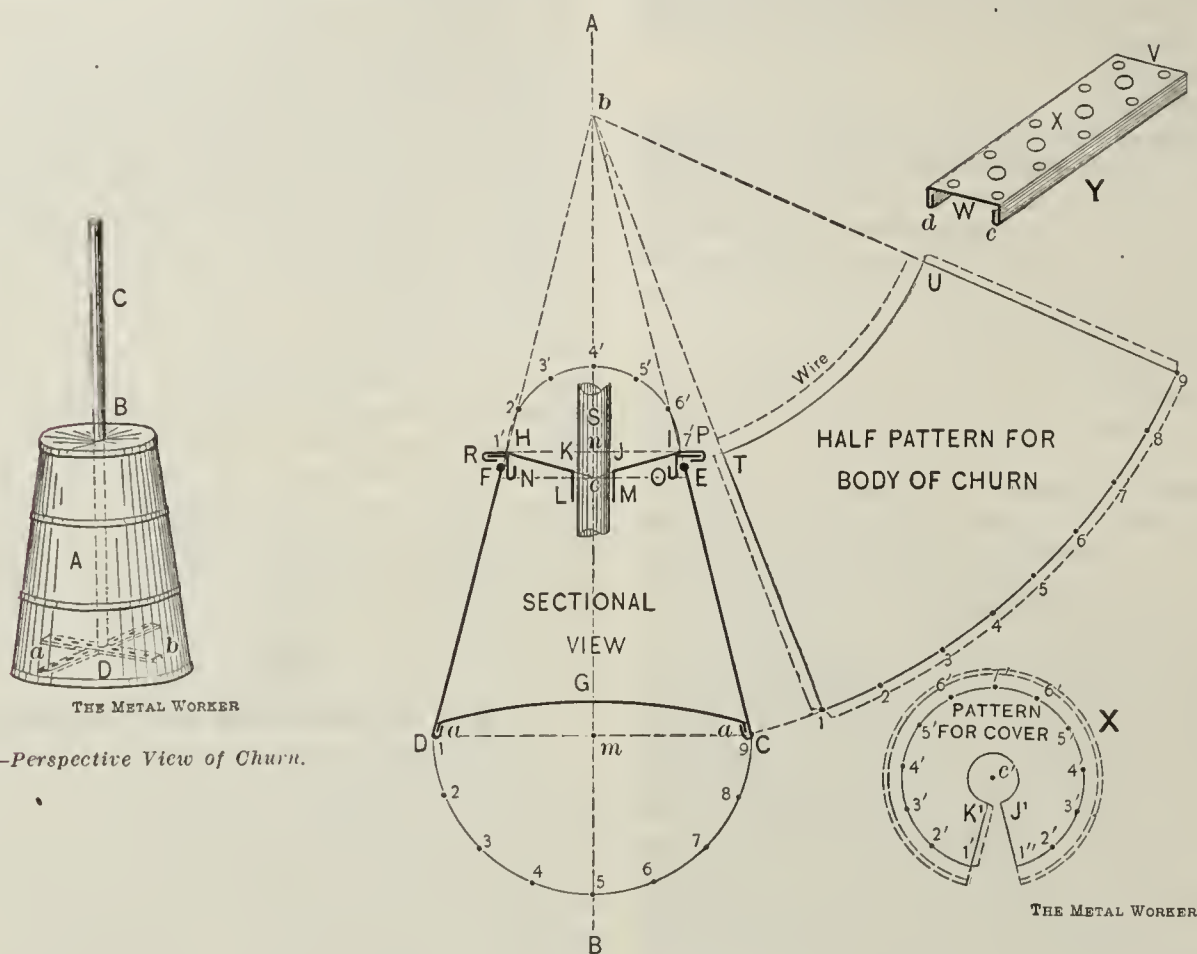


Fig. 1.—Perspective View of Churn.

Fig. 2.—Sectional Views and Patterns.

PATTERN FOR TIN CHURN.

cone, soldering a small tube in the center, as L M, to allow the handle S to work easily when churning. A double edge is allowed at P and R, to which the rim N O is seamed, fitting tightly into the top of the body, which is stiffened by the wire edge F E.

By making the cover in the shape of an inverted cone, any fluid which escapes while churning flows back again into the churn through the tube L M. Extend the sides of the cover I J and H K until they meet and intersect the center line at *c*. Now, with *m* and *n* as centers and radii equal respectively to *m C* and *n I*, draw the semicircles C 5 D and I 4' H, both of which divide into equal spaces, as shown respectively by points 1 to 9 and 1' to 7'. Then, with *b* as center and radii equal to *b C* and *b E*, describe the arcs C 9 and E U, and starting at any point, as 1, step off on the arc C 9 the stretchout of the semicircle D 5 C, as shown by similar figures on C 9. From 1 and 9 draw radial lines to the apex *b*, which intersect by an arc struck from *b* as center and *b E* as radius, thus locating the points T and U. Then will T U 9 1 be the half pattern for the body of the churn, to which laps are allowed for seaming and wiring, as shown.

For the pattern for the cover use *c'* in X as center, and with radii equal to *c J* and *c I* in the sectional view, de-

posed cut in wages when working on tin plate for export. The final vote will be an "aye" and "nay" one, and it is confidently stated now that the vote will be against accepting the reduction. Some lodges have voted in favor of it, but more have voted against it, and it is believed that the men will not accept the proposed cut. The officials of the Amalgamated Association favored the proposed cut and tried to get the men to accept it, but to no purpose. What action will be taken in the future by the respective parties, the American Tin Plate Company and the Amalgamated Association, remains to be seen.

WITHIN a short time everything at the Sheet plant of the Monarch Iron & Steel Company, at Parkersburg, W. Va., will be in as good as or better condition than it was before their main building was blown down recently by a storm. Work has been started on a boiler house, 38 x 53 feet, while the main building will be heavily reinforced and its strength considerably increased. The company have received the shears for the plant, and the Morgan Engineering Company, at Alliance, Ohio, will ship them a large anvil block this week weighing about 52,000 pounds.

Sheet Metal Truck.

The Fairbanks Company, 416-422 Broome street, New York, who manufacture hand trucks for handling all kinds of materials in a variety that exceeds 100 styles and patterns, have now put out the sheet metal truck here illustrated. It is designed for use in rolling mills or any place where sheet metal must be hauled about. In length the truck can be furnished from 10 to 14 feet, inclusive, 36 inches wide, with platform uniformly 23 inches high. The sheet rests on six strips of angle iron, placed longitudinally, $2\frac{1}{2} \times \frac{1}{2}$ inch in dimensions. There are three truss braces under the frame, each $1\frac{1}{4} \times \frac{3}{8}$ inch. There is one cross bar 2 inches square and six cross bars $2\frac{1}{2} \times \frac{3}{4}$ inch. Placed in the top of the platform to receive the metal sheets are 12 steel rollers, each $2 \times 8\frac{1}{2}$ inches, on which the sheets roll in the process of loading or unloading. The axles are $2\frac{1}{2}$ inches square, with heavy steel braces front and rear. The metal wheels are 21 inches in diameter, with 3-inch face, and have 14 cold drawn steel rolls in each hub, the rim of the wheels being cast iron, with wrought iron tires shrunk on and wrought iron spokes. The fifth



Sheet Metal Truck with Roller Top.

wheel is 15 inches in diameter. As the materials in this construction are entirely metallic the truck can be run into an oven with its contents if so desired.

Forest City Paints.

The Forest City Paint & Varnish Company, Cleveland, Ohio, have prepared and are distributing a new illustrated catalogue and price-list of the paints and varnishes which they manufacture. In an introductory note the company state that they use only the purest and best material in the manufacture of their goods. In the early pages attention is called to the Forest City mixed paints, which are furnished ready for use, and which are a strictly pure lead, zinc and linseed oil compound. The Forest City white lead and the Ledanoil white paint are also especially noticed. These are followed by the Forest City iron paints, adapted for use on buildings, roofs, tanks, &c. These are furnished, either in paste form or mixed ready for use, in red, black, brown, green, bright ochre and purple colors. The company also make a pure graphite paint, which can be used for similar purposes. One of the specialties of the concern is their Carbonite black elastic roof and iron paint, which is described as weather, water, rust, acid, sun and fire proof, and which can be used upon iron, steel, tin, wood, felt, tile, canvas, slate, brick or stone. They also offer a special smoke stack enamel, which is applied the same as any paint, and is claimed to be a perfect protection against rust or corrosion. The Forest City roofing cement, furnished in red, brown and black, is another product to which special attention is called. This cement, it is pointed out, is absolutely effective in stopping leaks in roofs, and for bedding and pointing slate, brick, stone, metal and wood work. It is elastic and

durable. A plumbers' soil, which is claimed to be entirely odorless and not liable to spoil, is also manufactured by the concern ready for use. The company further offer a full line of paint brushes, and everything connected with the use of paints and varnishes. Their catalogue is very tastefully gotten up, the cover bearing a design in four colors. The illustrations are all presented on special plates which bring out the half-tone engravings with good effect.

The Youngstown Iron Sheet & Tube Company.

The annual meeting of the stockholders of the Youngstown Iron Sheet & Tube Company was held in Youngstown, Ohio, last week. The stockholders were well satisfied with the report of the operations of the company submitted by James A. Campbell, general manager. The stockholders elected the old board and one additional member besides. The board as it now stands is as follows: Myron C. Wick, Robert Bentley, C. D. Hine, H. M. Garlick, William Wilkoff, James A. Campbell, H. H. Stambaugh, George L. Fordyce, all of Youngstown, and Harry Dalton, J. L. Severence and James Parmelee of Cleveland. The directors passed the election of a new president to take the place of George D. Wick, who retired when he went to Europe several months ago, deferring action on this office to a later meeting. The other officers elected were: James A. Campbell, general manager and vice-president; W. H. Foster, secre-

tary, and Richard Garlick, treasurer. It was decided to elect an Executive Board for the company, and the members to constitute this board chosen were: Robert Bentley, H. H. Stambaugh, James A. Campbell, Richard Garlick and George E. Day. The last named gentleman formerly of Casey & Day of Chicago, has also been made general sales agent. It is the intention of the company to erect a large basic open hearth steel works at Youngstown, and plans for the new works are now being prepared.

Follansbee Brothers Company.

Fallansbee Bros. Company of Pittsburgh, manufacturers of tin and terne plate and large jobbers in sheets and metal goods, have bought a tract of land at Mahan Station, on the Pittsburgh, Wheeling & Kentucky branch of the Panhandle Railroad, near Wheeling, W. Va., and will build on a part of the site a modern plant to contain four sheet and four tin mills. Contracts for much of the equipment and the building were placed some time since and the work of excavation has been finished. The new plant will be built as rapidly as possible and it is expected to be ready for operation early next year. A galvanizing works will be included. The company will manufacture black and galvanized sheets, corrugated sheets, eaves trough, siding and roofing and tin and terne plate. Follansbee Bros. Company have operated a tin plant in Allegheny, Pa., for some years, and this will be removed to the new works as soon as they are finished. The name of the station at which the new plant is located will be changed from Mahan to Follansbee. Abundant rail and river shipping facilities will be enjoyed as well as cheap coal and natural gas.

Roofing Tin.

For some time past, says the *Railway Review*, there have been frequent controversies in trade circles about the quality of terne plates (roofing tin). It is universally conceded that, all things considered, the thin sheets of iron and steel when well covered with the non-corrosive alloy of tin and lead are the most convenient and most serviceable form of roofing material. Terne plates are pliable and can be worked around sharp corners as well as on rounded or flat surfaces. The nature of the coating is such that the several plates can be seamed and soldered together into one large sheet of unbroken surface, which by means of the several seams is sufficiently flexible to allow for contraction in cold and expansion in hot weather. The rigidity and toughness of the steel, which forms the base of terne plates, makes the latter unbreakable, and yet their weight is less; and being non-combustible affords better protection against fire than any other roofing material.

These and many other merits possessed by roofing tin are conceded by everybody, but the contention is that terne plates made in recent years do not possess the same lasting qualities which in former years made this class of roofing stand without a peer in the roofing business. The blame for the alleged deterioration is generally but erroneously placed on the fact that soft steel has been substituted for wrought iron.

Before the Bessemer and open hearth or Siemens-Martin steel processes were invented the iron base of the coated sheets (commonly called "black plates") was, like all other forms or shapes of wrought or forged iron, rolled from blooms, produced in the knobbling fire or puddling furnace, but now Bessemer and open hearth soft steel are being used almost exclusively.

It seems reasonable that our steel makers did not and could not know at once for a certainty what ingredients and qualities of raw materials were required for roofing tin purposes and they may have occasionally made a miss of it; but everybody who became acquainted with the new steel process saw at once that the latter afforded far better facilities for homogeneousness and uniformity of product than the old methods. As is nearly always the case, so it is here, when people receive an inferior quality of the new product they will make comparison with the best class of material that had been made in the old way, forgetting entirely how often they had to hear complaints of various defects, such as that sheets were blistered or so brittle that they could not stand plain scaming, &c., defects which have been almost entirely eliminated by the steel process.

The nature of soft steel is, of course, different from that of wrought iron, and it must be admitted that while the advantages possessed by the substitute outnumber by far the disadvantages, some of the latter were encountered at first and it took time and study to overcome them, but that has now been successfully and completely accomplished.

At the present time a number of the great steel works, having recognized the importance of the tin roofing trade, make soft steel bars for high grade roofing tin purposes a specialty. We find that the raw iron for these bars is carefully selected, analyzed and inspected. The melting and casting of the ingots are done in a manner which eliminates or rather brings to the surface of the molten metal all the impurities that may have been contained in the raw material, and these are removed before the metal sets. As a further safeguard the top of the ingot is cropped before it is rolled into the "tin bars,"* and thus there are absolutely no impurities left in the metal that could cause disintegration from inside to out. The iron in the steel tin bar, and consequently in the black plates, is purer than it could ever be in wrought iron.

Some people have argued that the purity of the steel is the very cause of its quicker oxidation, but however that may be as regards uncoated steel goods, pure iron will not rust if it is removed absolutely from contact with the atmosphere by a covering of such non-corrosive metals as tin and lead.

It would be a strange fact indeed if in spite of all the progress that has been achieved, and in spite of all the scientific researches, we would have to go back to old and obsolete methods in order to produce good roofing tin. We now have the evidence that the once existing difficulties have been overcome and that good roofing can be obtained by those who will go to the trouble and look for it.

A coating process which will assure a thorough amalgamation of the coating mixture with the body of the plates is most essential in the production of reliable roofing tin. A careful study has revealed the fact that inferior coating methods are to blame for the production of inferior roofing tin rather than the substitution of soft steel for wrought iron.

* A steel bar rolled for tin and terne plate purposes is, in mill practice, called a tin bar.

It was unfortunate that almost simultaneously with the introduction of Bessemer and open hearth steel a number of new coating processes were tried and introduced with the view of reducing the cost of production, but the reduction if effected was in most cases at the sacrifice of quality.

At present there are yet a number of coating processes in vogue, and users of roofing tin will do well if they post themselves on the merits of the same. The United States Navy Department, which is known to be most careful in its investigations and strict in its requirements, has adopted the following in its standing specification for roofing tin:

"All roofing tin to be made of best quality soft steel as a basis.

"Coating to be thoroughly amalgamated with the black plate by the palm oil process. This coating must be applied so that the sheets be evenly and equally coated on both sides and the coating equally over each sheet. After the plate has been cleansed in a weak acid solution it is to be thoroughly washed with water, after which nothing is to be brought in contact with the black plate but pure palm oil, pure new tin and pure new lead."

Many of the leading architects are adopting the same or nearly the same specification. The amalgamation of the coating metal with the body of the black plate by means of the palm oil process (often called the "MF" method) has stood the test of time and has been found to be the most reliable.

Among the new inventions which have been made in coating methods is one which possesses real and high merit. This new method is a finishing process through which the plates pass after they come in a hot state out of the tinning pots. The treatment which the plates receive effects an instantaneous setting of the hot fluid coating while they are lying in a horizontal position in a bath of oily substance, the temperature of which is below the fusion point of the coating alloy. In this position the coating metal cannot run and must set at once uniformly all over the sheet, and the coating will be evenly thick from end to end and from side to side.

The plates receive a smooth mottled surface, free from dirty grease, clean to handle, and when finished have in addition to the metal coating a cover of transparent paint that does not interfere with the soldering qualities of the plates, but acts as additional protection against atmospheric influences. This method, when applied to plates that have been coated by the "MF" process, is an absolute insurance against corrosion.

The advocates of the restoration of the old iron base roofing tin frequently fortify their arguments by pointing out roofs which, though covered with roofing tin 25, 30 or 40 years ago, are still intact. While such is a good argument in favor of tin roofing generally it does not furnish a comparison between the lasting qualities of iron base and steel base tin roofing, for the tin roofs which wore out during the same period are not here any more, and as no record has been kept of them no one can know the proportion between long lived and short lived iron base tin roofs, and therefore these arguments are somewhat in line "with the pies that mother used to bake." On the other hand, "MF" roofing tin has been made with soft steel as a basis since 1878, and there are many roofs covered early in the eighties that still exist in good condition.

If the users of roofing tin will go to the trouble of paying close attention to the material which is put on their houses and will specify brands that bear the stamps of and are guaranteed by the manufacturers, they will find that roofing tin can be obtained which is better and will last longer than any that was made in older times, and they will also find that tin roofs are still the best house covering and being the best will be the cheapest in the long run.

Merchant & Co., Incorporated.

A new 100-page catalogue has just been issued by Merchant & Co., Incorporated, of Philadelphia, New York, Brooklyn and Chicago, covering their brass and copper specialties. It is a handy volume, 4 x 7 inches in size, and contains a number of illustrations, as well as a large amount of useful information for guidance in ordering, calculating and using their brass and copper products. In a special notice to the trade the company call attention to the fact that they carry in their Philadelphia warehouses one of the largest stocks of copper, brass, bronze, &c., and seamless and brazed tubing, sheets, rolls, rods, wire, &c., in the United States. The publication covers the entire line of copper and brass products and contains a large number of tables of weights, gauges and sizes of brass and copper sheets, tubes, wire, &c., together with other tables showing the

results of physical tests of various brass and copper products. Another useful feature of the work is rules for estimating the safe limit of bursting pressure on brass and copper tubing. Among the specialties to which attention is called is Tobin bronze, extruded metal and phosphor bronze, also copper rivets and burs, tacks and nails and perforated metals and wire cloth. At the end of the book are printed tables to find the area of circles, the decimal equivalents of sizes and the United States standard gauge for sheet and plate iron and steel, also tables of decimal equivalents in eighths, sixteenths, thirty-seconds and sixty-fourths of an inch, for use in connection with the micrometer caliper. A complete alphabetical index is a useful feature of the work.

The Pope Tin Plate Company.

The large new tin plate plant which the Pope Tin Plate Company of Pittsburgh, Pa., are erecting at Steubenville, Ohio, has been started into partial operation, seven mills being at work. The remaining five hot mills will be started in a few weeks. The new works when completed will have 12 hot mills and 5 cold rolls, with a 14-stack tin house. They will be one of the largest independent tin plate concerns in the country. The plant is controlled entirely by Pittsburgh capitalists. The main building, which has been completed, is of brick and steel construction, 65 x 460 feet in area. The cold roll mills are to be placed in tandem shape, thus considerably reducing the cost of operation and increasing the output. The entire plant will be completed during the present summer. Charles E. Pope is president of the concern and E. W. Mudge secretary and treasurer. The company's Pittsburgh office is at 421 Wood street.

FLASHINGS.

It is reported that two attempts were made to burn the plant of the American Tin Plate Company at Lisbon, Ohio, involving damage to the extent of \$1500.

THE JUNIATA STEEL & IRON COMPANY, Greencastle, Ind., expect to have their new Tin Plate plant in operation in October.

THE Pittsburgh plant of the American Tin Plate Company at New Kensington, Pa., is in full operation, but the company's Pennsylvania plant at the same place has not yet been started. A new Tin house is being built in connection with the last named works.

PRESIDENT GEORGE POWELL of the Tin Plate Workers' Protective Association, and District President George H. Barrett of the same organization, have been in Pittsburgh in conference with the district managers of the American Tin Plate Company. It is understood that the company desire to arrange for a rebate on the wage scale of their wash house employees, under the same conditions as those put before the Amalgamated Association—viz., a reduction in wages on work done on Tin Plates for export. The outcome of the conference has not been disclosed.

THE MUSKINGUM VALLEY SHEET STEEL COMPANY, Zanesville, Ohio, resumed operations last week, after a two weeks' shut down, during which a number of additions and improvements were made in the plant, which now has a capacity of about 15,000 tons of finished product a year. About 300 employees are on the pay roll of the company.

PAUL A. CONLON has removed his tinsmithing business from Holgate, Ohio, to Cass City, Mich.

THE BRISCOE MFG. COMPANY of Detroit, Mich., formerly the Detroit Galvanizing & Sheet Metal Works, purchased the property of the Detroit Electric Works, at 1427-1447 Woodward avenue. At present they occupy one-half of the building for their manufacturing purposes, but on January 1 next the concern will come into possession of the entire building, which is a three-story brick structure 120 x 320 feet.

A PATENT has been granted to Fritz O. Stromberg of Cleveland, Ohio, formerly of Braddock, Pa., for improvements in machinery for rolling Sheet metal. The purpose of the invention is to dispense with the hand

labor ordinarily employed in feeding the rolls and to substitute mechanism which will feed a Sheet or pack of Sheets and pass it continuously through and back over the rolls.

OWING to the favorable opportunity for a largely increased business, R. R. Mabie, 154 Chambers street, New York, has incorporated the contract roofing branch of his business under the title R. R. Mabie Roofing Company, in accordance with the laws of New York State, with an authorized capital of \$25,000. The company will make a specialty of Gravel, Slag, Asphalt and Tile Roofing, aiming particularly at many of the large contracts now in the market.

THE GEORGE A. HOGG IRON & STEEL FOUNDRY COMPANY of Pittsburgh, Pa., manufacturers of Rolling Mill Machinery, are equipping the annealing furnaces of the National Works of the American Tin Plate Company, at Monessen, Pa., also their United States Works at Demmler, Pa., and their American Works at Elwood, Ind., with the Freeman Furnace Charger.

THE plant of the Parkersburg Iron & Steel Company, at Parkersburg, W. Va., manufacturers of Iron and Steel Sheets, is to be much enlarged. A new annealing furnace is to be added and the rolling mill building will be considerably enlarged. Early in August the Bar mill, which has been under erection for some time, will be started. Work on the building of this Bar mill has been considerably delayed on account of difficulty in getting machinery.

THE rolling mill of the Illinois Zinc Company, La Salle, Ill., resumed operations on July 21, after a shut down for needed repairs.

M. J. HYLAND, Middletown, Conn., Gravel and Slate Roofing contractor, has recently secured a large number of important contracts, says the *Record*, including work for the Coe Brass Mfg. Company at Torrington, about 46,000 square feet of Roofing for the New England Enameling Company, the Slate Roofing of the new rectory of the Church of the Holy Trinity, and a considerable amount of new work on the buildings of the Connecticut Hospital for the Insane. Mr. Hyland has done work on these buildings for nearly 25 years past. His business is constantly increasing and he employs a large force of experienced workmen at all times.

THE WHEELING ROOFING & CORNICE COMPANY of Wheeling, W. Va., will shortly remove their plant to New Martinsburg, W. Va., where work has been begun on three buildings, including a Sheet mill and corrugating plant.

THE KESTER ELECTRIC MFG. COMPANY, 251 South Jefferson street, Chicago, Ill., have sent us circulars of their Self Fluxing Solder in wire, spools, coils, segments or drops. They also manufacture Kester's Concentrated Soldering Salts, which are used by the largest electrical manufacturing companies in electric lighting and telephone plants and by manufacturers of tinware and packers of fruit. The Salts are packed in cans of ½, 1, 5, 10, 25 and 50 pounds and barrels of 600 pounds.

THE ACME SPECIALTY COMPANY have removed to their new quarters, 26 East Pearl street, Cincinnati, Ohio, where they enjoy greatly enlarged facilities, with their capacity for output more than doubled. The company are now in a position to take care of all kinds of special Sheet Metal Work, including stamping and press work.

THE GARRY IRON & STEEL COMPANY, Cleveland, Ohio, are furnishing the structural material for four large buildings to be erected by the Atlanta Tin Plate Company, Atlanta, Ind., who are installing a rolling mill at that place.

The industrial school which is being erected on Ninth avenue, Homestead, by Charles M. Schwab, president of the United States Steel Corporation, is nearing completion and arrangements are being made to dedicate the school in September. The building has been in course of erection for more than a year, and when completed will have cost about \$100,000. It is built of buff brick, with Cleveland sandstone trimmings. C. M. Schwab will attend the dedication, and President Roosevelt has also been invited to be present.

Another Aluminum Solder.

William H. Whitney of Worcester, Mass., Clark University's expert instrument maker, has found what is claimed to be a perfect solder for aluminum. He keeps the composition of the flux and the liquid with which the surfaces of the metal are cleansed preparatory to soldering a secret, and will immediately take out a patent upon his discovery. The savants of the university assert that the solder withstands tests made to demonstrate its weakness if any exists. It is even claimed that the solder has the same strength as the metal itself. Mr. Whitney has used the solder extensively in instruments of which aluminum is an important feature, especially in connecting sections of aluminum wire.

TRADE NOTES.

W. N. BOWLER, president of the Forest City Paint & Varnish Company, Cleveland, Ohio, has been elected a member of the Executive Committee of the Wholesale Merchants' Board of the Cleveland Chamber of Commerce.

SCHNEIDER'S BRAZING AND SOLDERING FLUX is the subject of a leaflet sent out by the manufacturer, Emil Schneider, 298-306 South street, Newark, N. J. This Flux is described as an antiborax adapted for brazing and for soldering gold, silver, copper, brass and steel. Among the advantages claimed for it is the fact that the solder flows more freely and does not raise or boil up as when using borax, thus making clean, neat work. It is also said to make a firm and smooth joint, free from pin holes, and the additional assertion is made that 1 pound of flux will go as far as 5 pounds of borax. For soldering it is necessary simply to dilute the Flux with water, while for brazing it should be mixed with spelter and moistened with water.

THE R. D. SWISHER MFG. COMPANY, 152-154 Fifth avenue, Chicago, are sending out a 48-page catalogue and price-list of their Rubber Stamps for all purposes.

THE EUREKA FOUNDRY COMPANY of Chattanooga, Tenn., have been incorporated with a capital stock of \$25,000 by John Stagnier, Leo Strahle, G. B. Fletcher, B. R. Hodge and W. W. Delaney, to manufacture Iron and Brass Products, &c. An old foundry building is being remodeled and equipped with new machinery for the purpose.

THE AMERICAN ASBESTOS COMPANY of Bedford City, Va., have been organized with a capital stock of \$1,000,000 to mine and manufacture Asbestos. The officers are: William C. Doak, president; Alvin N. Higgin, vice-president, and Gustave A. Conzman, secretary, all of Terre Haute, Ind.

THE erection of the factory of the New England Enameling Company, at South Farms, Conn., is being pushed as rapidly as possible in order that it may be completed by September 1. It will be one of the best plants of its kind in the country.

THE Brass foundry of the Charles Parker Company, Meriden, Conn., was totally destroyed by fire recently.

THE EDWARD LITTLE COMPANY of New York City have been incorporated with a capital stock of \$2000 for the manufacture of Stamped Galvanized Ware. E. H. Little, A. W. Little and E. Little are the incorporators.

THE RUSSIAN CEMENT COMPANY, Gloucester, Mass., are distributing their price-list No. 16, illustrating Le Page's Liquid Glue, Mucilage, Cement and Library Paste.

THE AVERY STAMPING COMPANY, Cleveland, Ohio, are distributing what they term Ping Pong blotters, which show attractive pictures of the beasts of the wood playing the popular game. For rackets the Never-Break Spiders and Griddles are used, the netting being made of a row of Never-Break Kettles and Scotch Bowls.

THE S. M. HOWES COMPANY, 42-46 Union street, Boston, Mass., are manufacturing a line of French Folding Screens for fire places which are finished in pure brass, gilt, lacquer and Berlin black. They are made in a large variety of styles and in various heights. The company state that they are the only manufacturers of this line

in the United States and that their Screens are heavier, smoother finished and generally better than the imported articles. Their line of Screens are shown in connection with a variety of fire place goods made of brass, wrought iron and cast iron, and in the same catalogue which is ready for distribution. The catalogue shows a large variety of Basket Grates, Andirons, Fire Sets, Fenders, Bellows, Brushes, &c.

THE BOSTON BELTING COMPANY of Boston and New York are sending out a folder illustrating their Rubber Lined Cotton Mill Hose, also Unlined Linen Hose, for fire protection, with a description and price-list on each of these lines of goods.

THE NORTON EMERY WHEEL COMPANY of Worcester, Mass., are erecting a new shop at Barbers' Crossing, 80 x 152 feet, with a gallery on either side and at the north end of the building. In one of these galleries will be manufactured the small parts of their machines, and the other side will be devoted to commercial grinding. The main floor will be used for erecting purposes. The shop is equipped with a 10-ton electric crane and a number of electric motors. This shop is to be devoted exclusively to the manufacture of special Norton Grinding Machines for cylindrical work. Machines of this character are in growing demand, both in this country and in Europe.

WATERBURY BRASS COMPANY, Waterbury, Conn., and 130 Centre street, New York, are getting out an exceptionally complete catalogue relating to the large line of Brass and Copper and related products of which they are manufacturers. It will also contain rules and formulae and tables and other matter, which will thus be presented in a convenient form for reference. They are now receiving applications from parties who desire to be placed on the mailing list, to whom a copy will be sent as soon as the catalogue is issued.

A PAMPHLET has been prepared by the Monarch Smoke Preventer Company of Cincinnati dealing with their method of smoke prevention. It is stated that with this system any kind of coal can be used and increased boiler efficiency results.

THE OIL FILTER AND PURIFIER, made by the Burt Mfg. Company of Akron, Ohio, is covered in a recent pamphlet. This company have been making Oil Filters for 12 years past, and during that time have made and tested every kind of device for this purpose.

P. M. SHARPLES, West Chester, Pa., manufacturer of Cream Separators and Dairy Appliances, is enlarging his plant to nearly double the present capacity. The improvements consist of an extensive addition to the foundry and an addition, 50 x 350 feet, to the machine shops, the latter just completed. Mr. Sharples advises us that he had to refuse orders for a large number of Cream Separators this season because he could not supply them.

THE PORTER METAL WORKS, San Francisco, Cal., have added to their galvanizing plant a complete plant for tinning by the dipping process, and are now in a position to handle anything in the galvanizing and tinning line.

THE BLACK SILK STOVE POLISH WORKS, Lewis D. Wynn, proprietor, Sterling, Ill., advise us that their Black Silk Polish has now been on the market for 16 years without any change in name or keeping qualities, the claim being made that it will withstand any climate from three to five years without drying out. The ease and cleanliness of its application and the brilliant luster of the Polish are also pointed out. The company refer to the demand, both domestic and foreign, as ever increasing.

AYLING BROTHERS, 8 to 14 Haddon avenue, Chicago, are calling the attention of the trade to their newly patented A. B. Stove Polish, prepared in a powdered form, which is readily mixed and is claimed to give a quick and brilliant black water proof polish to the stove.

The meeting of the International Sanitary Congress, that was scheduled for opening in Washington, D. C., on October 15, has been postponed to December 2, in order to accommodate foreign delegates who desire to attend the meeting of the American Public Health Association, to be held in New Orleans, La., on December 8.

THE LETTER BOX.

Inquiries in regard to practical questions of general interest are invited, in reply to which we shall be glad to receive suggestions and information from our readers.

Correspondents are requested in all cases to give their names and addresses, which will not, however, be published or disclosed without their consent.

PATTERNS FOR A CHIMNEY TOP.

From J. L., New Brighton, S. I.—Will *The Metal Worker* please explain how to lay out the patters for a chimney top, as shown by the sketch which is sent herewith?

Answer.—The perspective view, Fig. 1, is a reproduction of our correspondent's sketch. To this we have added the orthographic projections, Fig. 2, in which the plan view is shown through A B in the elevation. The only development required for the chimney top is the hood, while the other pieces are round disks and oblong

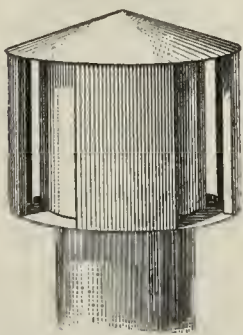


Fig. 1.—Reproduction of Correspondent's Sketch.

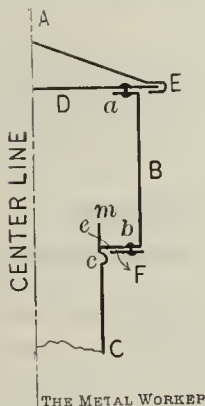


Fig. 3.—View of Construction.

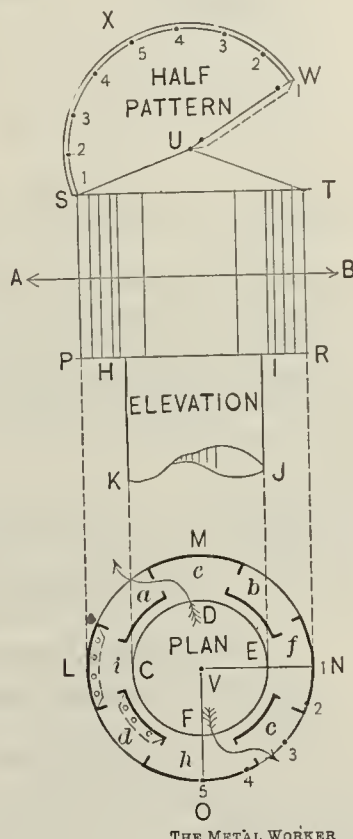


Fig. 2.—Plan, Elevation and Pattern.

PATTERNS FOR A CHIMNEY TOP.

pieces of metal. Thus, in Fig. 2, C D E F is the plan view of the pipe shown in elevation by H I J K. L M N O in plan shows the disk, shown in elevation by S T, and C D E F L M N O shows the circular ring shown in elevation by P H I R. These two patterns are obtained directly from the plan. a, b, c and d are the inner vertical louvers, while e, f, h and i are the outer vertical louvers, set in such a position on the upper and lower disks as to leave an opening for the escape of the smoke, which at the same time will keep the wind from causing a down draft. The escape of the smoke is indicated by the arrows.

The patters for the vertical louvers are as wide as the stretchout of a or e in plan, and as high as shown in the elevation from P to S, with laps allowed for riveting, as shown at i and d in the plan. The pattern for the hood is obtained in the usual manner. With U as center and U S as radius describe the arc S W, upon which place the stretchout of twice the amount of spaces contained in the quarter plan V N O, as shown by the small figures 1 to 5 to 1 on S X W. Draw a line from W to U and allow laps as shown by the dotted lines. Then will S U W X be the half pattern for the hood. This completes all of the patterns required.

The method of construction is shown in Fig. 3. A represents the hood, double-seamed to the disk D at E.

B shows the vertical louver, riveted to the disk D at the top at A, before the disk is double-seamed to the hood, and riveted to the disk F at the bottom at b. C shows the pipe with a bead, e, run through the same, on the beading machine, within $\frac{3}{4}$ inch from the edge m. The edge is then notched, the round ring F pressed tightly against the bead e, and the notched lap m turned over as shown at e, which completes the construction.

ARCHITECTS AND THE ROOFING QUESTION.

From F. K. T., Raleigh, N. C.—I cannot agree with "J. L." of Peterstown, W. Va., whose letter appeared in *The Metal Worker* of June 21, that architects pay too little attention to the roofs of the buildings they design. If the foundation is the most important part of the building structurally, so is the roof of the modern residence the most important feature architecturally. The roof is designed to fit the house, not the house to fit the roof. If the latter was the case it would be an easy matter to carry the roof water to the rear of the building and do away with "J. L.'s" water barrel, which he seems to think an unavoidable necessity.

I do agree, however, with "J. L." that more judgment might be used in locating the leaders from the roof, particularly in residence work. I have seen leaders fastened to the face of an Ionic veranda column, when they could just as well be run in the angle against the main building and thus have been comparatively out of sight. The wrong location of the leaders may have been the fault of the tinner, in which case it could be easily remedied. Such mistakes can be avoided if the architect in making his roof plan will mark on it the location of the necessary leaders and see that they are run in the positions indicated.

A residence with all main roof surfaces of equal pitch gives the best appearance, consequently the rain water will be more or less conveniently distributed to the front or sides, depending on the shape of the building. If the structure is large the water cannot be carried for too great a distance. It is generally possible, however, to grade gutters so that leaders can be run in angles of the building or in positions least exposed to sight. If this cannot be done a twisted polygon or corrugated leader, with ornamental conductor head and shoe, can be made to add rather than detract from the appearance of the building.

From T. B. G., Baltimore, Md.—A correspondent, "J. L." in *The Metal Worker* of June 21, calls attention, under the above caption, to the fact that some roofs are so badly designed as to throw most of the water to the front of the house. I do not understand why, if such is the case, provision cannot be made for leading the water away instead of collecting it in the primitive manner mentioned. In my own practice as an architect I have never seen the hogshead or barrel system resorted to in either country or suburban work. It may be true that, considering the multiplicity of more important matters, architects are sometimes careless in this particular, but I am quite sure that with a little study the spouter could generally so arrange matters as to lead the water to a more sightly and convenient place than the front. I beg the correspondent to carefully consider the next piece of work of the kind that comes into his hands and see if he cannot devise some scheme to obviate the difficulty.

PATTERN FOR TRANSITION PIECE.

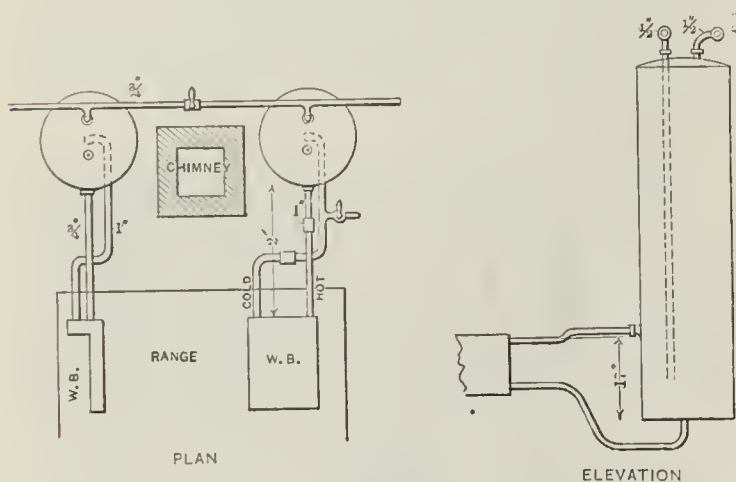
From T. J. W., Jersey City, N. J.—I should be greatly obliged if *The Metal Worker* would show me how to get out the patters for the piece of work of which I inclose a sketch.

Answer.—Our correspondent will find the method of describing patterns for a transition piece round at the top and oblong at the bottom, such as is shown in the sketch submitted by him, in Problem No. 188 of "The New Metal Worker Pattern Book."

BOILER TOO LOW.

From B. K. M., Torrington, Conn.—I have a problem in boiler and range connection upon which I would like the opinion of *The Metal Worker* and its expert readers. There is a steel range of the hotel type with two fire boxes and two water backs, each connected separately with a boiler. Fig. 1 is a plan showing the arrangement, and Fig. 2 is an elevation showing the pipe connections. The trouble is that there is an almost continual snapping, cracking and pounding noise going on in the boiler, more especially in the 80-gallon boiler, whenever the range is in use. Sometimes the sounds follow each other in rapid succession, and then again somewhat slower, and they are very annoying and disturbing, as they are so loud as to be heard over a considerable portion of the building and for quite a distance out into the yard. By drawing off large quantities of hot water temporary relief is afforded, but it lasts but a short time, when the noise continues as before. The piping and connections have been changed very recently from $\frac{3}{4}$ to 1 inch pipe, and the boiler taken out and cleaned, while the water back is new. All this has had no effect upon the noise, which continues just the same as with the old water back and the $\frac{3}{4}$ -inch pipe. The boilers are set low on account of low ceilings, so that the bottom of the lower one is about 17 inches lower than the level of the water back. There is a rise of about 1 inch from the water back to the hot water connection on the side of the boiler. From this explanation the situation may be understood, and I hope that some satisfactory solution of the problem will be presented, for it certainly will be welcome.

Note.—We shall be glad to have the views of our readers on this subject. In our opinion there is but little doubt that the trouble is largely due to the fact that the bottom of the boiler is so much below the water back, and that there is so small a rise from the water back to the side connection of the boiler. This impedes circulation and facilitates the generation of steam in the water back, which causes the noise when the steam condenses, whether it be in the piping or in the boiler. If there is no way of raising the boiler, benefit will be de-



Boiler Too Low.

rived from continuing the hot water pipe from the water back up to the top of the boiler and connecting it with the hot water service outlet. This should be done by removing the brass coupling and screwing a 1-inch iron pipe nipple in its place, and then a tee, the side of the tee to receive the hot water pipe from the water back, and the other opening to receive the hot water service pipe. It would also seem that the water back is larger than is needed for the work, as the fire is run, and that if a smaller water back was used, or a fire brick placed in front of the water back now in use, steam generation in the water back would be largely avoided.

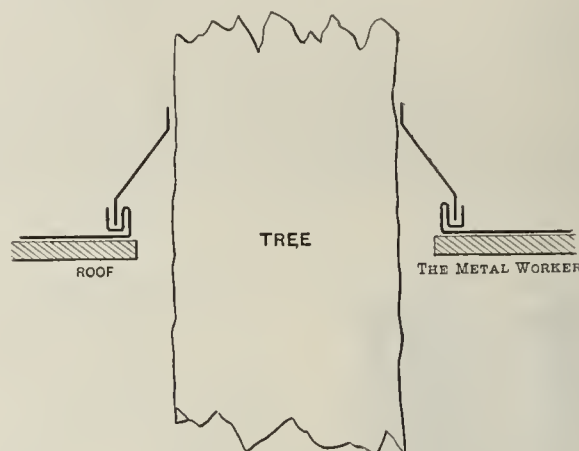
WHO MAKES THE EPPLY GUTTER BEADER?

From Carter, Donlevy & Co., Philadelphia, Pa.—Can you or any of the readers of *The Metal Worker* tell us who makes the Epply gutter beader? This is a machine made years ago for forming independent beads.

It was produced in York, Pa. We are unable to locate the present maker.

A ROOF AROUND A TREE.

From J. M., Washington, D. C.—I need information as to what is the best way to make an almost flat roof tight around an oak tree, about 12 inches in diameter where it comes through the roof. The following points, and perhaps some others, should be considered when making recommendations, namely: Health of tree, growth of tree, vibration of tree, heating of room through which the tree runs and that mosquitoes must



A Roof Around a Tree.

be kept out of the room. The roof is about 10 feet from the ground and will be flat seamed. I propose to make a water cup joint flashing, as shown in the accompanying sketch. The upper portion of the flashing will be in two parts, well lapped, and will have a band and draw bolts around the top to hold it suspended in the water cup.

Note.—This is an interesting and rather unusual question, and we hope that some of our readers who may have had experience of this kind of work will lend their aid to our correspondent.

PATTERN FOR BATHTUB.

From F. M., Petrolia, Canada.—I should like to find out through *The Metal Worker* how to lay out a pattern for a plunge bath which has a flow of 2 inches from the head to the foot and has more of a flare on the end than on the side. I inclose herewith a sketch showing the style of tub that I want to construct.

Answer.—If this correspondent will follow the principles shown in Problem No. 197 in "The New Metal Worker Pattern Book," he should have no difficulty in constructing the patterns for the bathtub shown in the sketch submitted by him.

Fires Caused by Electric Lights.

Although electric wiring, through being defective, is often the cause of fires, says *Fire and Water*, yet it may be that it is not unfrequently made a scapegoat for the carelessness of those who place inflammable goods and stuff too near incandescent electric light bulbs. It is a mistake to rely too entirely upon that method of lighting as being nearly absolutely safe—as great a mistake as to imagine that these bulbs give out small quantities of heat. An electrical expert says that "measurements show that of the energy of the current only 6 per cent. is turned into light; the other 94 per cent. manifests itself as heat. Inflammable substances near incandescent lamps are readily ignited. If a 16 candle-power lamp lighted by a current of 100 volts is immersed in a vessel containing 300 grams (10½ ounces) of water it will bring the water to boiling point in an hour. Celluloid near such a lamp is inflamed in five minutes. These and other experiments of the sort direct attention to the necessity of care even with electric light." The above statement tends to show that many of the fires that start in show windows lit by incandescent lamps are traceable, not to defective wiring, but to the abnormal heat generated by the electric light itself.

TRADE REPORT.

MARKET SUMMARY.

Pig Tin is dull and unchanged.
Copper is in light demand and without change in price.
Pig Lead is dull and firm.
Spelter continues scarce and strong, with tame demand.
Antimony is quiet and a shade lower in price.
Nickel is in fair demand and slightly lower in large lots.
Aluminum is firm and in good demand.
Tin Plates are very quiet and unchanged in price.
Black Sheets of the heavier gauges are in good demand, but Light Sheets are quiet; prices in the latter are softer.
Galvanized Sheets are quiet and unchanged.
Old Metals show no change.
Foundry Iron is very scarce and prices nominal.
Sheet Copper is in fair demand and firm in price.
Sheet Zinc is firm; demand is moderately active.
Hardware is seasonably quiet, with prices strong in nearly all lines.
Cast Iron Soil Pipe and Fittings, 4-inch and Extra Heavy, are scarce and in active demand; prices are higher.
Tarred Roofing is very active and strong.
Eave Trough and Conductor Pipe prices have been reduced 5 per cent.
Cast Iron Hollow Ware prices have been marked up.
Pitcher Spout Pumps are higher in price.
Wire Nails are quiet, with retail prices rather more soft.
Cut Nail prices have been reaffirmed for August; demand is moderate.
Window Glass is quiet and unchanged.
Linseed Oil is moderately active and firm.
Spirits Turpentine is quiet and $\frac{1}{2}$ c. lower.
Old Rubber is fairly active and prices are firmer.

METAL MARKET.

NEW YORK, August 1, 1902.

Pig Tin.—In sympathy with the London market, prices of Tin declined somewhat in the early part of the week. On Thursday, however, a stronger tone developed both here and in London, and prices returned to about the level ruling at the date of our last report; consequently, jobbers' quotations are unchanged. Straits Pig in small lots is quoted 29 $\frac{1}{4}$ c. to 29 $\frac{3}{4}$ c. per lb. Business has been extremely dull, this dullness being even more pronounced than is customary at this time of year. Importations of Tin at Atlantic ports during the month of July amounted to 2352 tons. Afloats now aggregate 3015 tons, of which more than one-half is expected to arrive within the next ten days. A scarcity of the metal here is not feared, therefore, and consumers are resting easily regarding future supplies and are awaiting a lower market before making large purchases.

Copper.—The position of Copper is entirely unchanged. The market presents a very tame appearance, the demand being of the lightest character. Prices, which remain on the level of a week ago, are still considered to be in buyers' favor. Even in a speculative way, the market has been inactive. Jobbers quote Lake Ingot in small lots at 13c. per lb., and Casting Copper at 12 $\frac{1}{2}$ c. to 12 $\frac{3}{4}$ c.

Sheet Copper.—The demand for Sheet Copper continues of fairly good proportions and prices remain firm on the basis of 18c. per lb. from store.

Pig Lead.—The market here is entirely without change. Demand is slow, as is customary at this season of the year, and prices are firm. American Pig in small lots is quoted at 4.45c. to 4 $\frac{1}{2}$ c. per lb. St. Louis advices report firm conditions ruling in the Lead mar-

ket at that point, with the quantity and quality of demand showing some improvement.

Spelter.—The market for Spelter remains firm. Spot is still very scarce and strong in price. The demand from all sources is comparatively small, otherwise spot prices would be materially higher than they are at the present time. Good Western brands in small lots are quoted by jobbers at 6c. to 6 $\frac{1}{2}$ c. per lb. St. Louis advices report that after a slight recession in the past week the Spelter market has strengthened, and a heavy demand has developed. Spot metal is very scarce and brings the highest price. The feeling of the trade seems to presage high prices for Spelter for some time to come.

Antimony.—This metal has again declined a shade, and the market is very quiet. Hallett's in small lots is quoted at 8 $\frac{3}{4}$ c. to 8 $\frac{1}{2}$ c., and Cookson's at 10 $\frac{1}{2}$ c. to 10 $\frac{3}{4}$ c.

Nickel.—This metal has declined somewhat, so far as wholesale prices are concerned, but small lots are quoted at from about 55c. to as high as 60c. per lb.

Aluminum.—The demand for Aluminum continues active and prices are without change. Small lots of No. 1 Ingot, guaranteed 99 per cent. pure, are quoted at 37c. per lb. and 100-lb. lots at 35c.

Tin Plates.—The market for Tin Plates is unchanged. The demand is slow and jobbers' prices continue at about the figures quoted for some time past. The American Tin Plate Company are now quoting for delivery up to the end of October at the figures now ruling—viz., a basis of \$4.19 per box of Standard 100-lb. Cokes. A number of the Tin Plate mills have been shut down, or are about to be shut down, presumably on account of lack of business. It is understood that stocks at mills are piling up to a considerable extent. Jobbers are quoting American Bessemer Coke Plates, 1C, 14 x 20, in moderate sized lots, delivered at New York and corresponding points at about \$4.70 to \$4.90 per box. Cable advices report the Welsh Tin Plate industry in a depressed condition. A further decline of 1 $\frac{1}{2}$ d. per box in the price of Welsh Plates was reported this week, the quotation now being 13s. 3d., f.o.b. Swansea.

Sheets.—A continued heavy demand is noted for the heavier gauges of Sheets, but the lighter gauges are very quiet. The tone of the market on these goods is weak. Prices of Galvanized Sheets are weaker than on Black. It is claimed that the Sheet mills that do not have their own supply of Steel and have to pay market prices for Sheet Bars and Spelter cannot sell Galvanized Sheets at present prices to make a profit. Stocks of both Black and Galvanized Sheets in jobbers' hands are reported to be increasing, as well as those at the mills. Some of the Independent Sheet mills are now quoting Galvanized Sheets at net prices, which has been the policy of the leading Sheet interest for some time. A majority of the jobbers are also selling Galvanized at net prices. No. 27 One Pass Cold Rolled Soft Steel Sheets in small lots are quoted at about 3.70c. and Galvanized at 4c. to 4.10c.

Chicago advices are as follows: The demand for Heavy Sheets has continued on a liberal scale and the market is very strong. Even Light Sheets have been less pressed for sale and Galvanized Sheets have been quiet without essential change in prices. No. 27 Black Sheets in small lots from store are quoted at 3.45c. to 3.55c. and Galvanized Sheets at 4.70c. to 4.75c. for No. 27.

Old Metals.—There has been no change in the general condition of the market for Scrap Metals. Scrap Iron is moving in fair volume, but other kinds of Old Metals are rather quiet. Prices are without quotable change. Dealers are paying about the following rates for moderate sized lots, delivered at New York or corresponding points:

Heavy Copper.....	per lb. 10 c.
Light and Tinned Copper.....	per lb. 9 c.
Heavy Brass.....	per lb. 8 c.

Light Brass.....	per lb.	6 1/2c.
Lead.....	per lb.	3 5/8c.
Tea Lead.....	per lb.	3 c.
Zinc.....	per lb.	3 1/4c.
Pure Aluminum Sheet.....	per lb.	22 c.
Cast Aluminum.....	per lb.	17 c.
No. 1 Pewter.....	per lb.	18 c.
No. 2 Pewter.....	per lb.	9 c.
Tin Plate Scrap, per gross ton.....		to \$5.00
Wrought Iron Scrap, per gross ton.....		\$13.00 to 13.50
Heavy Cast Scrap, per gross ton.....		12.00 to 12.50
Stove Plate Scrap, per gross ton.....		8.50 to 9.00
Burnt Iron, per gross ton.....		7.00 to 7.25

THE PIG IRON MARKET.

NEW YORK.—Practically no domestic Iron is available for the use of Eastern foundrymen, who are in need of stock. Sales of foreign Iron are therefore increasing, and importations are now being made to meet the sharp demand for prompt delivery, dealers taking their chances of selling a shipment to needy consumers before it arrives or shortly after it is landed on the dock. Foreign Iron is now setting the pace for any business requiring delivery this year. Prices realized are from \$22 to \$25, ex-ship, according to grade and time of delivery, the higher quotation being easily obtained for spot Iron, which can be delivered at once. Consumers are freely contracting for domestic Iron for delivery in 1903, and are apparently actuated by a determination to order enough to cover their requirements, as they are frequently taking double the quantity they usually buy at one time. It is believed that even if the miners' strike ends within the coming month the Eastern furnaces will not be able to attain their normal rate of production until well toward the end of September. For delivery in 1903 the following quotations are made: Northern Iron, at tidewater, No. IX, \$22.75 to \$24.75; No. 2 X, \$21.75 to \$22.75; No. 2 Plain, \$20.75 to \$21.75. Tennessee and Alabama brands, in New York and vicinity, No. 1 Foundry, \$22 to \$23; No. 2 Foundry, \$21.25 to \$22; No. 3 Foundry, \$20.75 to \$21.25.

CHICAGO.—While there have been fewer large individual sales, the demand for Pig Iron has continued active, with some evidence that the buying movement is broadening, the smaller consumers being ready and willing to place orders for next year's delivery. Very little spot Iron is available from furnaces, most of the spot Iron offered and sold being resales. There continues to be a very narrow margin between the grades of Iron wanted for urgent delivery. In a number of cases No. 2 and No. 1 Foundry are selling at the same price. The Southern producers continue to sell mainly on the basis of \$17 for No. 2 Foundry, Birmingham, all business being taken at the furnaces. The following prices are revised to conform to the character of the business now being negotiated, of which nine-tenths, perhaps, is for next year's delivery. Premiums of \$2 to \$3 per ton are being obtained on contracts for the current year, and premiums of \$5 to \$6 per ton are being obtained for spot delivery. The following are the prices current for delivery the first six months of 1903:

Lake Superior Charcoal.....	\$25.00 to \$26.00
Local Coke Foundry, No. 1.....	21.50 to 22.00
Local Coke Foundry, No. 2.....	21.00 to 21.50
Local Coke Foundry, No. 3.....	20.50 to 21.00
Local Scotch, No. 1.....	22.00 to 22.50
Ohio Strong Softeners, No. 1.....	24.00 to 24.50
Southern Silvery, according to Silicon.....	24.65 to 25.15
Southern Coke, No. 1.....	21.40 to 21.90
Southern Coke, No. 2.....	20.65 to 21.15
Southern Coke, No. 3.....	20.15 to 20.65
Southern Coke, No. 1 Soft.....	21.15 to 21.65
Southern Coke, No. 2 Soft.....	20.65 to 21.15

PHILADELPHIA.—There is little or no difference in the condition of the Pig Iron market to-day from that of a week ago. As regards the immediate situation, it may be said that there is enough Iron to go around, but the difficulty is to find the kind required. There is not enough of the Foundry grades, consequently these command better prices than they would if the furnaces were supplied with their usual fuel. Neither are imported Irons precisely what are wanted. Prices naturally are very irregular. The following quotations represent city or nearby deliveries during the last quarter of this year and the first half of next year, with a premium of 50c. to \$1 on August and September shipments:

No. 1 X Foundry.....	\$23.50 to \$24.50
No. 2 X Foundry.....	22.00 to 22.50
No. 2 Plain.....	21.00 to 22.00

PITTSBURGH.—Large contracts for Bessemer Iron for deliveries running all through next year have been made

during the past week. The price of \$18 at furnace for shipments of Bessemer through all of next year is regarded as a very fair one to both buyer and seller. It is a low price for the first quarter, but the price of Iron may be under \$18 before the end of next year. There have been heavy sales of No. 2 Foundry for shipment through the first half of next year at \$21.50, Pittsburgh. The Southern furnaces, which now have a pooling arrangement, have fixed the price of No. 2 at \$17, Birmingham, which, with the freight to Pittsburgh of \$4.15, makes the price of Southern No. 2 Foundry \$21.15 delivered here. No. 2 Foundry for shipment this side of January is quoted at \$22 to \$22.50, Pittsburgh.

CINCINNATI.—An unusually heavy week's business in next year's delivery has been done. Quite a number of Southern furnaces are found to be sold up for the first three months of 1903. Some of the Southern furnaces announce that, from now on, all Iron sold for the second quarter of 1903 must be on the basis of \$17.50, Birmingham, for No. 2 Foundry, this being an advance of 50c. over association prices of a week ago. The situation, however, for next year's delivery is just as it has been. Sellers who happen to have a few carloads of Foundry Iron have a dozen buyers in line in anticipation of the favor. We quote, f.o.b. Cincinnati, for 1902 delivery as follows, this year's delivery:

Southern Coke, No. 1.....	\$21.25 to \$22.25
Southern Coke, No. 2.....	20.75 to 21.75
Southern Coke, No. 3.....	20.25 to 21.25
Southern Coke, No. 4.....	19.75 to 20.75
Southern Coke, No. 1 Soft.....	21.25 to 22.25
Southern Coke, No. 2 Soft.....	20.75 to 21.75
Ohio Silvery, No. 1.....	25.85 to 26.10
Ohio Silvery, No. 2.....	25.35 to 25.85
Lake Superior Coke, No. 1.....	25.35 to 26.10
Lake Superior Coke, No. 2.....	25.10 to 25.60
Lake Superior Coke, No. 3.....	24.85 to 25.10

ST. LOUIS.—So far as new inquiry and demand for Pig Iron is concerned, these are quiet days. The bulk of the demand continues to come from parties whose requirements are covered in contracts, but on account of delayed delivery are compelled to pick up odd offerings in the open market. The furnaces seem to be very careful and conservative in booking orders for 1903 delivery and few orders are accepted by sales agents before first being submitted to the furnace managers. The following is the range of prices current for cash, f.o.b. St. Louis:

Southern, No. 1 Foundry.....	\$20.50 to \$23.50
Southern, No. 2 Foundry.....	20.75 to 22.75
Southern, No. 3 Foundry.....	20.25 to 22.25
Southern, No. 4 Foundry.....	19.75 to 21.75
No. 1 Soft.....	21.25 to 23.25
No. 2 Soft.....	20.75 to 22.75

CHICAGO REPORT.

Scrap Iron and Steel.—The market continues to harden, with moderate offerings and a good demand. In carload lots any one kind of Scrap would bring an advance over quotations, but for mixed lots of Country Scrap the following prices are paid by dealers:

	Per net ton.
Country Wrought Scrap.....	\$14.50 to \$15.00
Machinery Cast.....	to 13.50
Malleable Cast.....	12.00 to 13.00
Stove Plate (free from burnt).....	9.50 to 10.00
Burnt Iron and Grate Bars.....	8.00 to 9.00
Sheet Iron and Hoops.....	8.00 to 9.00
Plow Steel.....	12.00 to 13.00
Breaking Stock.....	to 11.00
Old Boilers—whole (Iron).....	9.50 to 10.00
Old Boilers (Iron) cut in single Sheets and Rings.....	12.50 to 13.00
Old Gas Pipe and Boiler Tubes.....	12.50 to 13.00
Cast Borings.....	8.50 to 9.00
Turnings.....	12.00 to 12.50
Horseshoes.....	14.00 to 14.50

Old Metals.—The market for Scrap Copper and Brass has shown but little, if any, improvement, yet prices have been well sustained. Zinc has continued firm, dealers being ready buyers at our quotations. The following prices are being paid by dealers in this market:

	Per lb.
Copper Wire and Heavy.....	10 1/2c.
Copper Bottoms.....	9 1/2c.
Copper Clips.....	10 1/4c.
Red Brass.....	10 1/2c.
Yellow Brass.....	8 1/4c.
Red Brass Borings.....	9 1/2c.
Yellow Brass Borings.....	7 1/2c.
Light Brass.....	6 1/2c.
Pipe Lead.....	3.70c.
Tea Lead.....	3.35c.
Zinc.....	3.35c.
Tin Foll.....	21 c.
Pewter, No. 1.....	18 c.
Pewter, No. 2.....	11 c.
Aluminum.....	20 c.

Old Rubber.—The offerings have not been large, and with a fair outlet the market has remained steady. Prices paid by dealers are as follows:

	Per net ton.	Per lb.
Garden Hose.....	\$25.00	.....
Air Brake Hose.....	45.00	.....
Rubber Shoes.....	.....	7 c.
Rubber Car Springs.....	.....	5 c.
Inside Bicycle Tubing.....	.....	22 c.
Outside Tubing.....	.....	5¾c.
Black Rubber.....	.....	4 c.
White Rubber.....	.....	8½c.

Rags.—The offerings have been less liberal and the market has continued to improve, but not enough to warrant any advance in prices. Dealers continue to buy liberal offerings at 65c. to 75c. per 100 lbs., Chicago delivery.

Anthracite Coal.—The situation has shown no improvement. The demand for current delivery is light and stocks, while declining, are ample. The movement on contracts has continued moderate. On August 1 the discount will be reduced to 10c. per ton. Following are the prices current, subject to a discount of 20c. for shipment made during July:

	Grate.	Egg and Stove.
Chicago	\$5.75	\$6.00
Milwaukee, Wis.....	5.75	6.00
St. Louis.....	6.20	6.45
Kansas City, Mo.....	8.25	8.50

THE HARDWARE TRADE.

Notwithstanding the general agreement that business promises well, there is only a moderate activity in the market at this time. This is principally on account of the time of year, as summer influences and the vacation season have a marked effect. In view of the pressure of business during the six months past there is evidently on the part of both merchants and manufacturers a desire to avail themselves of at least a brief period of relaxation, and the success which has generally rewarded their operations encourages this disposition. A remarkable feature of the situation at this time is the unusually small stocks of goods which are in the manufacturers' warehouses. Not for years has the fall season been approached with such light and broken assortments. Many factories are still at work on orders taken months ago, and throughout the trade there is much correspondence in the way of hurrying shipments or explaining the delay in making them. This state of things, connected with the high prices of the raw material and the difficulty in obtaining it in certain lines, tends to keep the market steady and to give it even a strong tone. A few lines, owing to exceptional influences, are regarded with suspicion and give perhaps evidence of a slight weakness, but many others have an upward tendency. In several kinds of goods it seems not unlikely that there will be a scarcity. Manufacturers generally recognize the opportunity which this state of things affords them and are obtaining good prices and refraining from contracting ahead except in a conservative way.

NOTES ON PRICES.

Cast Iron Soil Pipe and Fittings.—The manufacturers of Cast Iron Soil Pipe and Fittings are still considerably behind with their orders, and present indications are that it will be a long time before they are able to get abreast of the current business. The principal items which are reported as being scarce are 4-inch Standard Soil Pipe and 4-inch Extra Heavy Soil Pipe, the demand for which is far in excess of the production. The 4-inch Fittings, Standard and Extra Heavy, are also reported as being very scarce. The local foundries are practically snowed under with business and there is no telling when deliveries of 4-inch Pipe and Fittings can be made by these plants. The only 4-inch Pipe coming into the New York market at the present time reaches here from Southern foundries, and this is the first time within two years that any of the Southern plants have been able to reach out to the New York market. This size of Pipe and Fittings is commanding a premium upon the manufacturers' selling price to the jobbers', this being readily paid in order to obtain the necessary

Pipe to tide over until the goods contracted for with the local foundries can be procured. The following notice has been sent out by the Manufacturers' Association of Cast Iron Soil Pipe and Fittings: "On September 1 next the minimum weight on Cast Iron Soil Pipe and Fittings in carloads will be advanced by railroads to 40,000 pounds., instead of 30,000 pounds, as at present. This also refers to Cast Iron Pipe and Connections and to Sinks, Cesspools and all goods of a kindred nature."

The Thompson Meter Company, 79 Washington street, Brooklyn, N. Y., have issued under date of July 1, 1902, a reduced price-list of their Disk Water Meters, as follows:

Disk Water Meters.			
Ordinary Register, Round Dial; or, Star Register, Straight Reading.			
5/8-inch size.....	\$10.66	2-inch size.....	\$66.66
¾ " "	16.00	3 " "	120.00
1 " "	21.33	4 " "	233.34
1½ " "	40.00	6 " "	500.00
Connections for Lead or Iron Pipe per Set, Extra.			
5/8", 53 cents; ¾", 80 cents; 1", \$1.06.			
Sizes and Prices of Fish Traps.			
5/8", ¾", and 1", \$6.67; 1½" and 2", \$8.00; 3", \$13.34; 4", \$20.00; 6", \$26.67.			

Cast Iron Goods.—An advance in the prices of Cast Iron Specialties has been made within the last week or two. Among the goods which are higher are Hollow Ware Cooking Utensils and Pitcher Spout Pumps.

Fall Goods.—Considerable activity is noted in the demand for certain goods for fall and winter use. Manufacturers and dealers report a heavy call for Coal Hods, Stove Boards, Elbows, &c., which compares favorably with the demand in any previous season.

Eave Trough and Conductor Pipe.—The manufacturers of Eave Trough and Conductor Pipe made a change in the price of these goods under date of July 21. Galvanized Corrugated Conductor, nested, is now quoted at 75 per cent. discount, and not nested at 70 and 12½ per cent. discount, similar discounts being quoted for Plain Round Conductor, nested and not nested. Galvanized Eave Trough is quoted at 80 per cent. discount in less than carload lots.

Tarred Roofing and Sheathing.—In the business of Tarred Roofing products everybody seems to be mid-summer busy, with a firm market and probability of a scarcity of stock and slow deliveries as soon as the fall trade sets in. Prices at present remain about the same as were made last spring, which, however, were sharply advanced at that time in consequence of the absorption of important competing interests and the working agreement arrived at with some of the independent concerns whose business was not taken over. Tarred Roofing, single ply, is now quoted \$32 per ton, in less than carload lots; two-ply Roofing Felt, 65 cents, and three-ply, 87 cents per roll, the prices covering light to heavy weight stock. Rosin Sized Sheathing, in rolls of 500 square feet, is quoted at 37 cents, light, 25-pound rolls; 45 cents, medium, 30-pound rolls, and 60 cents, heavy, 40-pound rolls, in less than carloads. Slaters' Felt is 75 cents per roll, less than carloads, the rolls containing 500 square feet.

Wire Nails.—The demand for Wire Nails is confined largely to small lots. While the summer quiet affects the demand from nearby territory, small lots from store are moving in satisfactory volume, considering the season. Small lots from store are quoted at \$2.25 to \$2.30 per keg.

Cut Nails.—No change was made in the price of Cut Nails at the regular meeting of the Nail Association this week. The prices for July were reaffirmed for the month of August. The demand for Cut Nails is moderate, small lots from store being quoted at \$2.30 per keg.

Window Glass.—The local Glass market remains quiet, with the future a matter of uncertainty. The Jobbers' Association quotations for Window Glass, single and double strength, from store, remain at 88 and 5 per cent. discount.

Linseed Oil.—But few orders of any size are being placed for prompt delivery. A fair business in small

lots of Oil is reported and the market is firm at the prices quoted last week, City Raw in small lots ruling at 68 to 68½ cents per gallon.

Spirits Turpentine.—During the week liberal deliveries of Turpentine on local contracts have supplied most requirements and restricted the demand to small lots. Receipts at Savannah are reported as large, with a depressing effect upon prices at that point. Quotations here are about ½ cent lower than a week ago, Turpentine in small lots from store ruling at 47 to 47½ cents per gallon.

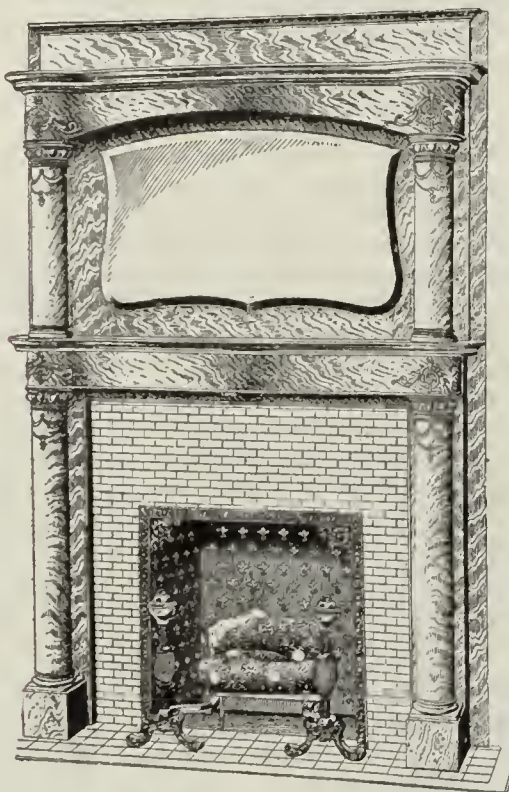
Old Rubber.—The market for Scrap Rubber is fairly active and prices are firmer than they have been of late. Dealers in New York and vicinity are now paying about the following figures:

Car Springs, ton lots, per lb.....	5c.
Rubber Shoes, less than carloads, per lb.....	6¾ to 7c.
White Wringer Rolls, per lb.....	7c.
Inside Bicycle Tubing, per lb.....	21½c.
Outside Tubing, per lb.....	5½c.

The Celluvarno Company, Newark, N. J., have reduced their prices for treating Water Closet Tanks and Seats with their patent preparation. Seats and Covers are now treated in dozen lots at \$5 each and Tanks in dozen lots at \$8, the same to be furnished by the owner.

Attractive Mantel Design.

Some of our readers will be interested in the many designs of attractive mantels, open fire places, grates, &c., which are shown in a catalogue recently issued by



Attractive Mantel Design.

Charles F. Lorenzen & Co., 288 North Ashland avenue, Chicago, Ill. The various lines which are sold direct from the factory cover a handsome assortment of mantels adapted for the modern dwelling and, as indicating the character of the work turned out, we present the accompanying illustration of a mantel which would be appropriate for a parlor, or, in fact, almost any room in a modern dwelling. The construction involves elaborate hand carved Renaissance capitals, swelled shelf and heavy cornice. It is made of choice quarter sawed oak or birch, and is treated in what is known as piano finish. It has heavy veneered columns, 4½ inches in diameter; a tile opening, 42 x 42 inches, and a mantel width of 5 feet.

In connection with their mantels the company have introduced a new idea in mounting the tile. It is pointed out that the fact that a person cannot procure the services of a skilled mason to set the tiles need not deter him from buying a tiled mantel, as the company's method of mounting tile on slate provides for this contingency and obviates the need of a mason, while it

renders the setting up of a tile mantel a comparatively easy matter. The catalogue which the company have issued, illustrating and describing an extended assortment of wood mantels, grates, tiles, grilles, &c., shows their work to great advantage, and we understand that any one desiring a copy of the publication can procure it by sending to the address given above.

To Pickle Brass Castings.

The following method of pickling brass castings is recommended by an exchange: If greasy, the castings should be cleaned by boiling in lye or potash. The first pickle is composed of nitric acid, 1 quart; water, 6 to 8 quarts. After pickling in this mixture the castings should be washed in clear warm or hot water, and the following pickle be then used: Sulphuric acid, 1 quart; nitric acid, 2 quarts; muriatic acid, a few drops. The first pickle will remove the discolorations due to iron, if present. The muriatic acid of the second pickle will darken the color of the castings to an extent depending on the amount used.

CONTENTS.

	Page.
Editorials—	
The South African Market	37
Enlarging a Retail Business	37
Read Your Trade Paper	37
Editorial Notes	38
The Business Outlook	38
The Michigan Stove Company's Historical Site. Illustrated	39
The Lindemann & Hoverson Catalogue	39
Red Cross Stove Catalogue	40
The Iron City Gas Stove. Illustrated	40
Gas Stoves and Stove Trimmings	40
The Michigan Manufacturers' Association	41
Economy Stoves and Ranges	41
The Gem Stove Caster. Illustrated	41
The Monarch Hub Range	41
Adjusting Stove Plate Prices	42
The New Jewel Steel Ranges	42
Odd Plates	43
Michigan Retail Hardware Dealers' Association	44
Berger's Improved Tubular Headlight. Illustrated	44
"L. & G." Galvanized Ware	44
Rochester Lamp Company	45
The Lawson Clothes Line Reel. Illustrated	45
Bakers', Confectioners' and Hotel Goods	45
The Dewey Stock Fountain. Illustrated	45
Cold and Hot Water Service and Circulating Piping. Illustrated	46
The New Departure Bibbs. Illustrated	46
Stealing Water	47
The Aerated Fuel Process	47
A New Sun Ray Boiler. Illustrated	47
The Gem Water Heater. Illustrated	48
Contract for Large Fans	48
The Monitor Pipe Holder. Illustrated	48
Bathtub Equipments. Illustrated	49
The Field Automatic Basin Cock. Illustrated	50
American Spiral Pipe Works	50
Purdy's Pipe Clamp. Illustrated	50
A Fine Plumbing System	50
The Efficiency of Acetylene Generators	51
Pipe Coils	51
Heating and Plumbing Notes	51
New Firms and Changes	52
Where Our Manufacturing Exports Go	53
Process of Galvanizing	53
Pig Iron Production for Six Months	53
Pattern for Tin Churn. Illustrated	54
The Proposed Tin Plate Wage Reduction	54
Sheet Metal Truck. Illustrated	55
Forest City Paints	55
The Youngstown Iron Sheet & Tube Company	55
Follansbee Brothers Company	55
Roofing Tin	56
Merchant & Co., Incorporated	56
The Pope Tin Plate Company	57
Flashings	57
Another Aluminum Solder	58
Trade Notes	58
The Letter Box—	
Patterns for a Chimney Top. Illustrated	59
Architects and the Roofing Question	59
Pattern for Transition Piece	59
Boiler Too Low. Illustrated	60
Who Makes the Epply Gutter Beader ?	60
A Roof Around a Tree. Illustrated	60
Patterns for Bathtub	60
Fires Caused by Electric Lights	60
Trade Report—	
Market Summary	61
Metal Market	61
The Pig Iron Market	62
Chicago Report	62
The Hardware Trade	63
Notes on Prices	63
Metal and Miscellaneous Prices	65
Labor Exchange—	
Help and Situations Wanted	69

ROOFING SUPPLIES, METALS, TIN PLATES, &c.

REVISED JULY 31, 1902.

Aluminum—		
No. 1 Aluminum (guaranteed over 99% Pure), in ingots for remelting.	37¢	
Small lots.	35¢	
100-lb lots.	35¢	
Aluminum Sheet, B. & S. gauge.		
In lots of 50 lbs or more.		
Wider than 6-in. 14-in. 24-in.		
And including.	14-in. 24-in. 30-in.	
Nos. 13 to 19.	\$0.42 \$0.44 \$0.47	
" 20.	.44 .48 .51	
" 21 to 23.	.46 .48 .51	
" 24.	.47 .51 .54	
" 25.	.47 .54 .59	
" 26.	.48 .57 .62	
" 27.	.48 .57 .64	
" 28.	.49 .60 .69	
" 29.	.50 .64 .77	
" 30.	.50 .64 .77	
Note.—Lots of less than 50 lbs 5¢ per lb extra.		

Antimony—		
Cookson.	10¢@10½¢	
Hallett's.	8¢@8½¢	
U.S.	8¢@8½¢	

Brass, Roll and Sheet.	30%
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Conductors—

Corrugated.

Round or Square—

Galvanized ½ or more N's't'd.	70%&10%
Not N'ested.	70%&5%
Plain Round, ½ or more.	70%&10%
N'ested.	70%&5%
Galvanized, Plain Round, Not N'ested.	70%&5%

Spiral Lock Seam Pipe—

Galvanized.	60%&60%&10%
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Spiral Riveted.

Galvanized.	40%
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See also Elbows and Shoes; Eave Trough Miters; Strainers, Conductor.

Conductor Strainers—

See Strainers, Conductor

Copper—

Lake Ingot.	13¢@13½¢
Casting.	12½¢@12¾¢
Sheet and Bolt.	18¢@18½¢
Cold Rolled Sheets.	19¢@19½¢
Cold Rolled and Polished Sheets.	20¢@20½¢
Planished Sheets.	21¢@21½¢
Bottoms, Pits and Flats.	22¢@22½¢

Eave Trough Galvanized

Territory.	L. C. L.
Eastern.	75%&10%
Central.	75%&7½%
Southern.	70%&12½%
S. Western.	70%&10%
Terms, 2% for cash.	

Eave Trough Miters—

Lap or Slip Joint.	list, 25%
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Elbows—Plain Adjustable—

Eastern List.

Tin.	30%
Galvanized.	30%
Perfect Elbows.	40%

Stove Pipe—

Four-Piece	
No. 1.	4 4½ 5 5½ 6-inch.
No. 2.	80 .85 .90 1.00 1.05 per doz.
No. 3.	.85 .70 .75 .80 .85
No. 4.	.60 .63 .65 .70 .80

Elbows and Shoes—

Galvanized.	60%
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Gasoline—

See Petroleum Products.

Iron, Sheet—Black.

One Pass, C. R., Soft Steel.

Nos. 14 to 16.	3.30
Nos. 18 to 21.	3.40
Nos. 22 to 24.	3.50
Nos. 25 and 26.	3.60
No. 27.	3.70
No. 28.	3.80

R. G. Cleaned.

Nos. 14 to 16.	3.35
Nos. 18 to 21.	3.45
Nos. 22 to 24.	3.55
Nos. 25 and 26.	3.65
No. 27.	3.75
No. 28.	3.85

Russia, Planished, &c.

Genuine Russia, according to assortment.

Do. Stained.

Patent Planished.

Galvanized.

Nos. 14 and 16.	3.45@3.50
Nos. 18 and 20.	3.70@3.80
Nos. 22 and 24.	4.00@4.10
No. 26.	4.25@4.40
No. 28.	4.55@4.70
No. 27.	4.85@5.00
No. 30.	6.00@6.20

No. 20 and lighter, 36 inches wide, 25¢ higher.

Lead—

American Pig.	4.45@4½¢
Bar.	5¢@5½¢
Pipe.	6½¢@2½¢ off
Tin Lined Pipe.	12½¢@20¢ off
Sheet Lead.	7½¢@20¢ off
Old Lead in exchange, 3½¢ per lb.	

Mitres Eave Trough—

See Eave Trough Miters.

Nickel—

Per lb.	55¢@60¢
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Paints, Oils &c.—

Leads—

Lead, American White, in Oil.	
Lots of 500 lb or over.	6½¢ @ 6½¢
Lots less than 500 lb.	6½¢ @ 6½¢
Lead, White, in oil, 25 lb tin.	
rolls, add to keg price.	1¢ @ 1¢
Lead, White, in oil, 12½ lb tin.	
rolls, add to keg price.	1¢ @ 1¢
Lead, White, in oil, 1 to 5 lb as-sorted tins, add to keg price.	1½¢ @ 1½¢
Lead, White, Dry in bbls.	5½¢ @ 6¢
Lead, Red, bbls., ½ bbls. and kegs.	
Lots 500 lb or over.	6¢ @ 6¢
Lots less than 500 lb.	6½¢ @ 6½¢

Oils—

Linseed, City, raw.	68¢@68½¢
Linseed, City, boiled.	70¢@70½¢
Linseed State and West'n, raw.	67¢@67½¢

Spirits Turpentine—

In Southern bbls.	47¢@47½¢
In machine bbls.	47½¢@49¢

Putty—

In bulk.	\$2.25
In bladders.	2.25
In cans 12 lb to 25 lb.	2.25
In cans 1 lb to 5 lb.	3.25

Petroleum Products—

In Barrels (Barrel Included)

Stove Gasoline.	10½¢@11¢
Kerosene.	12¢@13¢

Pipe, Block Tin—

Per lb.	37¢
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Pipe Drain—

	40%
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Pipe, Spiral—

See Conductors.

Registers—

List Sept. 2, 1901.

Black Japanned.	70%
White Japanned.	70%
Nickel Plated.	70%
Bronze Finishes in Imitation of Gold.	70%
Silver, Copper or Bronze.	70%
Electroplated in Brass, Bronze or Copper.	70%
White Porcelain.	80%
Solid Brass and Bronze Metal.	50%

Roofing Material—

1 Ply Tarred Paper.	31.00@32.00
2 Ply Tarred Paper.	roll, 108 sq. ft. 55¢@60¢
3 Ply Tarred Paper.	roll, 108 sq. ft. 80¢@85¢
Slater's Felt.	ton, \$35.00@36.00
Roofing Pitch.	bbl. \$2.50

Rosin—

Common and Good—Strained.

Rosin, C. & D.	bbl. \$1.57¢@1.60
Rosin, E. & F.	bbl. 1.85 @ 1.72½¢
Rosin, G. & H.	bbl. 1.75 @ 1.90
Rosin, I. & K.	bbl. 2.35 @ 3.00
Rosin, M. & N.	bbl. 3.35 @ 3.70

Shoes and Elbows—

See Elbows and Shoes.

Slate Roofing—

f. o. b. cars, Quarry Station.

Pennsylvania:	
Best Bangor.	sq. \$3.75@3.80
No. 1 Bangor Ribbon.	sq. 3.50 @ 3.75
Pen Argyle.	sq. 3.50 @ 4.50
Peaoh Bottom.	sq. 5.25 @ 6.35
No. 1 Chapman.	sq. 3.75 @ 4.75
No. 1 Penna. Black.	sq. 3.15 @ 4.15
Unfading Washington Ban-gor.	sq. 3.00 @ 4.50
Vermont:	
No. 1 Sea Green.	sq. \$2.25@3.50
Purple.	sq. 4.50 @ 5.00
Unfading Green.	sq. 4.25 @ 5.25
Red.	sq. 7.00@11.00
Maine:	
Brownville. Unfading Black.	
No. 1.	sq. \$5.25@7.50

Solder—

½¢ guaranteed.	19½¢@19¾¢
No. 1.	16½¢@18¼¢

Prices of Solder indicated by private brands vary according to composition.

Soldering Fluids—

Per Pound.

Concentrated Flux.	4c
Eureka Flux:	
Triple Strength.	3c
Extra Concentrated.	4½c
Crystal.	7c
Gedney's Fluid.	2c
Lennox Fluid.	2c
Perfection Flux.	3c
Yager's Salts, 1 lb. bottles.	each, 50¢
1 lb. bottles, per lb.	45¢

Soldering Coppers—

Per lb.	22¢@24¢
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Spelter—

Western Spelter.	6¢@6½¢
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Spiral Pipe—

See Conductors.

Stove Pipe Elbows—

See Elbows, Stove Pipe.

Stove Trucks—

See Trucks, Stove.

Strainers, Conductor—

Galvanized.	50%
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Tin Pigs and Bars—

Banca pigs.	29¼¢@29¾¢
Straits pigs.	29¼¢@29¾¢
Straits, in bars.	30¼¢@30¾¢

Tin Plates American

Charcoal Plates, Bright—

N. B.—The price of 20 x 28 sizes double the price of 14 x 20.

Calland Grade:

IC.	14 x 20.	\$6.75
IX.	14 x 20.	8.25
IXX.	14 x 20.	9.50
IXXX.	14 x 20.	10.75
IXXXX.	14 x 20.	12.00

Melyn Grade:

IC.	14 x 20.	6.25
IX.	14 x 20.	7.75
IXX.	14 x 20.	9.06
IXXX.	14 x 20.	10.25
IXXXX.	14 x 20.	11.50

Allaway Grade:

IC.	14 x 20.	5.75
IX.	14 x 20.	6.85
IXX.	14 x 20.	7.95
IXXX.	14 x 20.	9.05
IXXXX.	14 x 20.	10.15

Coke Plates, Bright—

Bessemer Steel, or equal to J. IC, 14 x 20.

B. Grade, full weight.	IX, 14 x 20.	\$4.90@5.00
	IX, 14 x 20.	\$6.00

N. B.—The reduction per box on lighter Plates than IC, 14 x 20, is as follows:

100 lb.	15¢
95 lb.	20¢
90 lb.	25¢
85 lb.	30¢

Terne Plates—

N. B.—The following prices are for IC 20 x 28, the rate for 14 x 20 being half as much. IX is usually held at \$2 per box advance for 8 to 10 lb coating and \$2.50 to \$3 advance for 15 lb and upward.

About 40 lb coating.	\$16.00@16.50
About 30 lb coating.	15.25@15.75
About 20 lb coating.	13.25@13.75
About 15 lb coating.	11.25@11.75
About 8 lb coating.	9.50@10.00

Boiler Plates, American—

IXX, 14 x 28..(112 sheets)	\$12.50
IXX, 14 x 28..(112 sheets)	13.50
IXX, 14 x 31..(112 sheets)	15.00

Troughs Eave—

See Eave Trough.

Trucks, Stove—

Improved Lock Frame, per doz.	\$15.00
Steel Lock Frame, per doz.	18.00
Daisy Improved pattern, per doz.	18.00

Tubes and Tubing—

Brazed Brass, List June 6, 1898.	40%
Copper and Bronze, 3c per lb. list more than Brass.	
Seamless Brass Tubes, net list Feb. 6, 1899.	
Tin.	50%
Galvanized.	50%
Fittings for do.	40%

Zinc—

600 lb casks per lb.	6½¢
Per lb.	7¼¢@7½¢

PLUMBERS' AND STEAM FITTERS' SUPPLIES.

Boilers, Galvanized—

Standard Boilers:	
30 gal.	72½¢
35 and 40 gal.	70%
Other sizes up to 52 gal.	65%
52 gal. and above.	55%&5%

Extra Heavy Boilers:

18 to 52 gal.	60%
53 gal. and above.	50%&5%

Brass Work, Plumbers'—

List of December 7, 1898.

Compression:

Basin Cocks.	80¢@10%
Bath Cocks and Double Bath Cocks.	60¢@10%
Bibs.	80¢@10%
Bibs, Flanged.	80¢@10%

Fuller:

Bibs.	70%
Basin Cocks, Nos. 1 to 4.	70%
Bath Cocks, No. 4.	\$2.40 each net

Ground Key Work:

Finished Bibs.	60%
Rough Bibs.	60%&5%
Rough Stop and Stop and Waste Cocks.	70%&70%&5%
Rough Stop and Stop and Waste Cocks, Patented.	65%&65%&5%

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Adler, H. Co. 14	Colebrook, W. H. Sons & Co. 32	Harrington & King Perfo- rating Co. 66	Montross Metal Shingle Co. 78	Sheppard, Isaac A. & Co. 1
American Blower Co. 25	Colwell Lead Co. 34	Hart & Cooley Co. 29	Morgan & Co. 33	Shields, W. H. & Co. 31
American Galvanizing Wks. 73	Cooney & Geizer. 72	Hart & Crouse Co. 15	Mueller, L. J. F'ce Co. 18	Smith, H. B. Co. 16
American Radiator Co. 23	Co-operative Foundry Co. 8&9	Heartley Machine Variety Iron & Tool Works. 83	Mullins, W. H. 80	Smith & Anthony Co. 84
American Sheet Steel Co. 1&76	Cope, Geo. W. 30	Hellos-Upton Co. 26	Munsell, E. & Co. 27	Smith & Thayer Co. 24
American Steam Gage & Valve Mfg. Co. 1	Cortright Metal Roofing Co. 74	Hessler, H. E. Co. 31	National Enameling & Stamp- ing Co. 36	Somerset Stove Fdry. Co. 26
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Anderson Coupling Co. 35	Curtis & Curtis Co. 35	Howes, S. M. Co. 32&33	New York Iron Roofing & Corrugating Co. 78	Special Notices. 69
Arcade Mfg. Co. 32	Dangler Stove & Mfg. Co. 10	Howson & Howson. 71	New York Trade School. 70	Sperry, D. R. & Co. 72
Armstrong Mfg. Co. 35	Danzer Metal Works. 81	Hnbbell, Harvey. 34	Niagara Machine & Tool Wks. 81	Stamford Foundry Co. 24
Asheville Mica Co. 27	Davis Heater Co. 20	Independent Register Co. 26	Nickel Plate Stove Polish Co. 33	Standard Lighting Co. 12
Asphalt Ready Roofing Co. 77	Day Metallic Mfg. Co. 34	International Heater Co. 3	Noppel Pump Co. 34	Steel & Iron Aluminum Coat- ing Co. 75
Auld & Conger Co. 73	Dighton Furnace Co. 22	Irwin, H. L. 70	O'Halloran & Jacobs. 73	Stiles & Parker Press Co. 82
Ayling Bros. 32	Dixon, Jos. Crucible Co. 26	Iwan Bros. 72	Ohio Mica Co. 27	Stocking, E. B. 71
Barstow Stove Co. 84	Double Truss Cornice Brake Co. 80	Janney, Steinmetz & Co. 74	Ohl, Geo. A. & Co. 82	Stolz, Frank D. 25
Beckwith, P. D., Est. of. 2	Drake, W. H. 26	Jenkins Bros. 1	Oshorn, J. M. & L. A. 78	Stowell Mfg. Co. 80
Berger Bros. Co. 74	Drouve, G. Co. 81	Joliet Stove Works. 4	Ostrander, W. R. & Co. 79	Sweet, A. L. Iron Works. 25
Berger Mfg. Co. 71	Edwards, J. H. 35	Johnson, E. J. & Co. 73	Patric Furnace Co. 20	Taylor Co., N. & J. 84
Bergstrom Bros. & Co. 15	Edwards Mfg. Co. 78	Keene, Geo. C. & Co. 83	Peck-Hammond Co. 13	Thatcher Furnace Co. 20
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Bliss, E. W. Co. 82	Excelsior Steel Furnace Co. 29	Kewanee Boiler Co. 17	Perkins, J. L. & Co. 72	U. S. Register Co., Ltd. 13
Blodgett, G. S. Co. 25	Fenn, Geo. E. 72	Kleley & Mueller. 1	Phila. Machine Tool Co. 81	Utica Heater Co. 18
Boss Washing Machine Co. 72	Floyd, Wells & Co. 21	Koven, L. O. & Bro. 32	Pierce, Butler & Pierce Mfg. Co. 25	Valentine, M. D. & Bro. Co. 31
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Phila. Machine Tool Co., Phila., Pa.
Porock, O., Cincinnati, O.
Robinson J. M. Mfg. Co., Cincinnati, Ohio.
Stiles & Parker Press Co., Brooklyn, N. Y.
- Sheets, Aluminum Coated Steel.**
 Steel & Iron Aluminum Coating Co., Counellsville, Pa.
- Sheets, Galvanized.**
American Sheet Steel Co., New York.
Bruce & Cook, 186 to 190 Water St., N. Y.
McClure & Co., Pittsburgh, Pa.
Osborn, J. M. & L. A., Cleveland, O.
Wood Alan Co., Philadelphia, Pa.
- Sheets, Iron and Steel.**
American Sheet Steel Co., New York.
Bruce & Cook, 186 to 190 Water St., N. Y.
Coe, Jas. A. & Co., Newark, N. J.
Follansbee Bros. Co., Pittsburgh, Pa.
Gummey, McFarland & Co., Phila., Pa.
Osborn, J. M. & L. A., Cleveland, O.
Wood Co., Alan, Philadelphia, Pa.
- Shingles and Tiles, Metallic.**
Chattanooga Steel Roofing Co., Chattanooga, Tenn.
Cincinnati Stamping Co., Cincinnati, O.
Cortright Metal Roofing Co., Philadelphia, Pa.
Merchant & Co., Philadelphia, Pa.
Meurer Bros. Co., Brooklyn, N. Y.
Montross Metal Shingle Co., Camden, N. J.
- Sht.**
Colwell Lead Co., 63 Centre St., N. Y.
- Siding.** (See Roofing and Siding.)
- Skylights.**
Canton Steel Roofing Co., Canton, O.
Chattanooga Steel Roofing Co., Chattanooga, Tenn.
Drouve, G. Co., Bridgeport, Conn.
Galesburg Cornice Works, Galesburg, Ill.
Mullins, W. H., Salem, O.
- Slaters' Tools.**
Galt, Jno. & Sons, 253 Broadway, N. Y.
Salein Nail Co., 279 Pearl St., N. Y.
- Snow Guards.**
Clason Arch. Metal Works, Providence, R. I.
- Solder.**
Bruce & Cook, 186 to 190 Water St., N. Y.
Follansbee Bros. Co., Pittsburgh, Pa.
Gummey, McFarland & Co., Phila., Pa.
McClure & Co., Pittsburgh, Pa.
Meurer Bros. Co., Brooklyn, N. Y.
Taylor, N. & G. Co., Philadelphia, Pa.
- Soldering Coppers.**
Waterbury Brass Co., 122 Centre St., N. Y.
- Soldering Furnaces.**
Clark Novelty Co., Rochester, N. Y.
- Speaking Tubes and Whistles.**
Ostrander, W. R. & Co., 22 Dey Street, N. Y.
- Specialties, Sheet Metal.**
Vogel, Wm. & Bros., Brooklyn, N. Y.
- Statuary, Sheet Copper and Bronze.**
Mullins, W. H., Salem, O.
- Steam and Gas Fitters' Supplies.**
Curtis & Curtis Co., Bridgeport, Conn.
Walworth Mfg. Co., Boston, Mass.
- Steam and Water Engineering and Regulating Specialties.**
Kieley & Mueller, 7-11 West 13th St., N. Y.
- Steel Stamps and Stencil Dies.**
Schwerdtle Stamp Co., Bridgeport, Ct.
- Stove Cement.**
Dixon, Jos. Crucible Co., Jersey City, N. J.
Rutland Fire Clay Co., Rutland, Vt.
- Stove Linings.**
Bridgeport Crucible Co., Bridgeport, Conn.
Hessler, H. E. Co., Syracuse, N. Y.
Marcy Stove Repair Co., 74 Beekman St., N. Y.
Presbrey Stove Lining Co., Taunton, Mass.
Rutland Fire Clay Co., Rutland, Vt.
Valentine, M. D. & Bro. Co., Woodbridge, N. J.
Williams Stove Lining Co., Taunton, Mass.
- Stove and Metal Polish.**
Ayling Bros., Chicago, Ill.
Hoffman, Geo. W., Indianapolis, Ind.
Nickel Plate Stove Polish Co., Chicago, Ill.
Rutland Fire Clay Co., Rutland, Vt.
- Stove Patterns.**
Cope, G. W., Detroit, Mich.
Gobeille Pattern Co., Cleveland, O.
Milwaukee Pattern Works, Milwaukee, Wis.
Vedder Pattern Works, Troy, N. Y.
- Stove Repairs.**
Clark, Henry N. Co., Boston, Mass.
Howes, S. M. Co., Boston, Mass.
Marcy Stove Repair Co., 74 Beekman St., N. Y.
Metropolis Sheet Metals & Stove Repairing Co., Newark, N. J.
Troy Nickel Works, Troy, N. Y.
- Stove Trimmings, &c.**
Scheidt, W. H. & Co., Troy, N. Y.
Troy Nickel Works, Troy, N. Y.
- Stove Trucks.**
Arcade Mfg. Co., Freeport, Ill.
Howes, S. M. Co., Boston, Mass.
Tucker & Dorsey Mfg. Co., Indianapolis, Ind.
- Stoves and Ranges.**
Barstow Stove Co., Providence, R. I.
Beckwith, P. D., Est. of, Dowagiac, Mich.
Bergstrom Bros. & Co., Neenah, Wis.
Boynton Furnace Co., 207 Water Street, New York.
Brand Stove Co., Milwaukee, Wis.
Champion Steel Range Co., Cleveland, Ohio.
Clark, Geo. M. & Co., Chicago, Ill.
Co-operative Foundry Co., Rochester, N. Y.
- Dighton Furnace Co.,** Taunton, Mass.
Floyd, Wells & Co., Roversford, Pa.
Fuller & Warren Co., Troy, N. Y.
Giblin & Co., Utica, N. Y.
Joliet Stove Works, Joliet, Ill.
Magee Furnace Co., Boston, Mass.
Michigan Stove Co., Chicago, Ill.
Peck-Hammond Co., Cincinnati, O.
Pittsburgh Stove & Range Co., Pittsburgh, Pa.
Portsmouth Stove & Range Co., Portsmouth, O.
Richmond Company, Norwich, Conn.
Ringer Stove Co., St. Louis, Mo.
Schli Bros. Co., Crestline, O.
Schneider & Trenkamp Co., Cleveland, O.
Shepard, Isaac A. & Co., Phila., Pa.
Smith & Anthony Co., Boston, Mass.
Somerset Stove Foundry Co., Somerset, Mass.
Stamford Foundry Co., Stamford, Ct.
Walker & Pratt Mfg. Co., Boston, Mass.
Weir Stove Co., Taunton, Mass.
White, Warner Co., Taunton, Mass.
Willard, Wm. G., St. Louis, Mo.
- Stoves and Ranges, Gas.**
Adler, H. & Co., Pittsburgh, Pa.
Clark, Geo. M. & Co., Chicago, Ill.
Co-operative Foundry Co., Rochester, N. Y.
Dangler Stove & Mfg. Co., Cleveland, Ohio.
Dighton Furnace Co., Taunton, Mass.
Howes, S. M. Co., Boston, Mass.
Metropolis Sheet Metals & Stove Repairing Co., Newark, N. J.
Ringer Stove Co., St. Louis, Mo.
Standard Lighting Co., Cleveland, O.
- Stoves and Ranges, Oil, Vapor and Gasoline.**
Clark, Geo. M. & Co., Chicago, Ill.
Dangler Stove & Mfg. Co., Cleveland, Ohio.
Ringer Stove Co., St. Louis, Mo.
Schneider & Trenkamp Co., Cleveland, O.
Standard Lighting Co., Cleveland, O.
- Tank Heaters.**
American Radiator Co., Chicago, Ill.
- Tanks, Steel and Wood.**
Edwards, J. H., 59 Park Place, N. Y.
- Terne Plates.**
American Tin Plate Co., New York.
Taylor, N. & G. Co., Phila., Pa.
- Tinners' Tools, Machines and Supplies.**
Berger Bros. Co., Phila., Pa.
Bertsch & Co., Cambridge City, Ind.
Bliss, E. W. Co., Brooklyn, N. Y.
Bruce & Cook, 186 to 190 Water St., New York.
Follanshee Bros. Co., Pittsburgh, Pa.
Keene, Geo. C. & Co., Cincinnati, O.
Meurer Bros. Co., Brooklyn, N. Y.
Niagara Machine & Tool Wks., Buffalo, N. Y.
Ohl, Geo. A. & Co., Newark, N. J.
Peck, Stow & Wilcox Co., 27 Murray St., New York.
Stiles & Parker Press Co., Brooklyn, N. Y.
Weiss, H. & Co., 20 Cliff St., N. Y.
- Tinners' Trimmings.**
Vogel, Wm. & Bros., Brooklyn, N. Y.
- Tin Plate.**
American Tin Plate Co., New York.
Bruce & Cook, 186 to 190 Water St., New York.
Coe, Jas. A. & Co., Newark, N. J.
Follanshee Bros. Co., Pittsburgh, Pa.
Gummey, McFarland & Co., Phila., Pa.
McClure & Co., Pittsburgh, Pa.
Merchant & Co., Philadelphia, Pa.
Meurer Bros. Co., Brooklyn, N. Y.
Osborn, J. M. & L. A., Cleveland, Ohio.
Taylor, N. & G. Co., Philadelphia, Pa.
- Tool Grinder.**
Robertson Mfg. Co., Buffalo, N. Y.
- Tools and Machines, Steam and Gas Fitters.**
Armstrong Mfg. Co., Bridgeport, Conn.
Curtis & Curtis Co., Bridgeport, Conn.
Saunders, D. Sons, Yonkers, N. Y.
- Torches, Plumbers.**
A. D. Mfg. Co., Syracuse, N. Y.
Clayton & Lambert Mfg. Co., Detroit, Mich.
- Trade Schools.**
New York Trade School, 1st Ave., 67th and 68th Streets, N. Y.
- Valves.**
Am. Steam Gage & Valve Mfg. Co., Boston, Mass.
Crosby Steam Gage & Valve Co., Boston, Mass.
Jenkins Bros., 71 John St., New York.
Monash-Younger Co., Chicago, Ill.
Morgan & Co., Chicago, Ill.
- Ventilating Apparatus.**
American Blower Co., Detroit, Mich.
Buffalo Forge Co., Buffalo, N. Y.
- Ventilators and Chimneys.**
Iwan Bros., Streator, Ill.
- Ventilators and Chimney Caps.**
Berger Bros. Co., Phila., Pa.
Buffalo Forge Co., Buffalo, N. Y.
Fenn, Geo. E., Boston, Mass.
Globe Ventilator Co., Troy, N. Y.
Kramer Bros., Dayton, O.
Merchant & Co., Philadelphia, Pa.
Meurer Bros. Co., Brooklyn, N. Y.
Washburne, E. G. & Co., 46 Cortlandt St., New York.
- Washing Machines.**
Boss Washing Machine Co., Cincinnati, Ohio.
- Washers, Valves, &c.**
Marston, I. G. & Co., Boston, Mass.
- Water Coolers.**
National Enameling & Stamping Co., 78 Beekman St., N. Y.
- Water Closets.**
Adee, Fred. & Co., 90 Beekman St., N. Y.
Colwell Lead Co., 63 Centre St., N. Y.
- Water Fronts.**
Clark, Henry N. Co., Boston, Mass.
- Water Heaters.**
Davis Heater Co., Racine, Wis.
Kemp, C. M. Mfg. Co., Baltimore, Md.
- White Lead.**
Forest City Paint & Varnish Co., Cleveland, Ohio.
- Wind Gates.**
Miner & Peck Mfg. Co., New Haven, Ct.

SEE ALPHABETICAL INDEX, PAGE 66.

THE METAL WORKER.

With which is Incorporated The Stove and Tin Trade Journal, The Sheet Metal Builder, and Metal.

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LABOR EXCHANGE.

Notices under this heading of reasonable length are inserted free of charge. Only those relating to employment are admitted. Write distinctly on one side of paper only, and do not use postal cards.

Original letters of reference should not be inclosed with replies to advertisements appearing in these columns as they are frequently mislaid and lost. A copy of the reference will serve the purpose.

HELP WANTED.

METAL STAMPER. "M. S." care *The Metal Worker*, New York. Aug. 2

All around TINNER and CORNICE WORKER; state wages wanted. Chas. F. Hauck & Co., 35 West Main street, Springfield, Ohio. Aug. 2

First-class MECHANIC, experienced in galvanizing iron, cornice and blow pipe work. John H. Sharer, 1606 and 1608 Cherry street, Toledo, Ohio. Aug. 2

A good cornice and skylight maker as FOREMAN who is a good cutter and can estimate on work from plans, and who can take full charge of shop, including the roofing line if required to do so; must not be afraid of work; no need to belong to union; a good job for the right man. "Employer," care *The Metal Worker*, New York. Aug. 2

First-class CUTTER on cornice work. M. F. Westergren, 433 East 144th street, New York. Aug. 2

A young man of good address, preferably having some acquaintance with architects and builders in New York city, to solicit opportunity to estimate on plumbing work; one who can secure interviews with leading men and arrange for bids to be submitted; knowledge of the details of plumbing unnecessary; good connection with house of good reputation open to one having the right qualifications. "Sanitarian," care *The Metal Worker*, New York. Aug. 2

A young man who has had experience in designing and estimating on heating and ventilating apparatus of the better class in New York can secure position with an established house; good address, some acquaintance with the architects and ability to secure plans for bidding, desirable qualifications; a good opportunity for an ambitious, energetic man of good education and presence. "Selling Engineer," care *The Metal Worker*, New York. Aug. 2

At once, first-class TINSMITH, having had experience in heavy galvanized iron work; must be strictly sober and reliable; steady job all year to a good man. T. E. Newman, Johnstown, Pa. Aug. 2

Four good CORNICE and SKYLIGHT WORKERS; eight hours. The G. Drouve Company, Bridgeport, Conn. Aug. 2

SALESMAN acquainted with trade in Atlantic Coast States to sell a line of oil heaters; give experience and reference. "Field," care *The Metal Worker*, New York. Aug. 2

Two first-class TINNERS who can do all kinds of furnace work; state wages; only first-class men need apply. Miller & Miller, Iowa City, Iowa. Aug. 2

First-class PLUMBER; steady work year round; must be good lead worker and sober; none others need apply; references required and state wages. Edgar W. Strong, Smethport, Pa. Aug. 2

At once, a TINNER; steady and good job to the right man; one who can do slating preferred. D. A. Williams, Jefferson, Ohio. Aug. 2

A good all around man that understands PLUMBING and TINSMITHING; work all year round; must give reference. Henry Schafer, 17 Central avenue, Albany, N. Y. Aug. 2

A first-class PLUMBER; one who can do steam and hot water heating; wages \$3.50 per day, nine hours; write at once. L. A. McGuigan, Davis, W. Va. Aug. 2

Two good TINNERS, at once. Lentz & Norr, Piqua, Ohio. Aug. 2

At once, a good PLUMBER and TINNER for country shop; a steady position to a good mechanic; state salary wanted and reference. P. O. Box 48, Eureka, Humboldt County, Cal. Aug. 2

Good PLUMBER at once, with fair knowledge of tin and sheet iron work. Kennedy Mfg. Company, Pottsville, Pa. Aug. 2

A first-class PLUMBER with experience in tin work and furnace work; a man who can lay out and execute all jobs in above lines; good in old work; none but capable man need apply; steady job to right man. E. B. Schenk Hardware Company, Mt. Vernon, Ind. Aug. 2

To correspond with strictly first-class, sober, nonunion PLUMBERS; wages, \$4.50 for eight hours. Lock Box 586, Boise, Idaho. Aug. 2

A first-class all around TINSMITH; eight hours work. Shurter & Briggs, 268 Main street, Poughkeepsie, N. Y. July 26

TINNER; one that is good on general jobbing; state wages. "C." P. O. Box 447, Seymour, Conn. July 26

Three good men who thoroughly understand installing of hot air furnaces; good wages to good men. Moncrief Furnace & Foundry Company, Atlanta, Ga. July 26

TINSMITH, experienced at roofing. Address, stating experience and wages wanted, J. H. Brown, 372 North street, Rochester, N. Y. July 26

CORNICE MAKER to do cutting and take charge of six or eight men; near New York City. "H. H." care *The Metal Worker*, New York. July 26

Two CORNICE MAKERS and three TIN and SHEET IRON WORKERS. Apply at the Newburgh Cornice Works, Newburgh, N. Y. July 26

At once, good all around TINNER with some knowledge of furnace work; steady job to the right man. J. H. Lane, Jonesboro, Ark. July 26

FOREMAN for room devoted to making high grade plated tinware in tinware factory; desirable situation may be had. "Desirable," care *The Metal Worker*, New York. July 26

WORKING FOREMAN in a cornice, tin roofing, &c., shop, who has charge of men; must be at least 35 years old and good experience. The Mitchell Roofing Company, Third and B streets, S. W., or W. H. O'Connor, 222 Third street, N. W., Washington, D. C. July 26

A live young man; one that has had some experience in selling stoves, ranges and heaters; reference required. South Erie Iron Works, Erie, Pa. July 26

Two first-class BLOW PIPE MEN can find steady work by applying at Savannah Blow Pipe Works, Savannah, Ga. July 26

Two first-class PLUMBERS; steady work year round; must be good lead workers and sober; none others need apply. Chas. L. Titus, Uniontown, Pa. July 26

A good TINSMITH who can do plumbing. Geo. A. Antoine, Bldeford, Maine. July 26

Experienced man to run CORNICE BRAKE; permanent position. "Cornice," care *The Metal Worker*, 117-119 South Fourth street, Philadelphia, Pa. July 26

DRUMMER, at once, for cornice business. M. S. A. Wilson, 408-410 East Seventy-seventh street, New York. July 26

SITUATIONS WANTED.

A young man, 23 years of age, with three years' experience in the stove business, wishes a position in same line with chance for advancement; best reference. "A. A. C.," 1044 Elmsmere place, New York. Aug. 2

FOREMAN for cornice and sheet iron work, with all the necessary experience in drafting and cutting, wishes to change his position; only large shops will be taken into consideration. "Real Foreman," care *The Metal Worker*, New York. Aug. 2

By a young man, 33 years of age, practical PLUMBER and GAS FITTER; 18 years' experience at the trade in New York City; can figure from and read plans; position as journeyman or take charge of shop; willing to go anywhere. P. H. Becker, Lillian place and Woodruff street, New York. Aug. 2

By a first-class japanner as FOREMAN; expert color and japan mixer; also can handle cheap help; first-class references; wages, \$18 per week. Box 77, care *The Metal Worker*, 1205 Fisher Building, Chicago, Ill. Aug. 2

A first-class PLUMBER; city or country. "B. W.," 362 Sixth street, Hoboken, N. J. Aug. 2

CHIMNEY MAN with 10 years' experience on rotary ventilators, making and erecting, desires steady position; temperate and reliable. "T. A. G.," 90 Stamford street, Boston, Mass. Aug. 2

By sober, reliable young man, 25 years of age, as PLUMBER and GAS FITTER; some knowledge of hot water heating; good jobber; six years' experience in New York City shop; moderate wages for steady job; state wages. F. R. Penprae, Hillside street, Milton, Mass. Aug. 2

PLUMBER and GAS FITTER; sober and reliable young man; used to city; can work from plans; single, unencumbered; corporation or estate preferred; moderate wages for steady position. "Plumber," Box 355, Taunton, Mass. Aug. 2

SHEET METAL WORKER, seven years' experience, graduate in pattern drafting with International Correspondence Schools, would like place as cutter for heating and ventilating shop in New York or Brooklyn; member of New York union; good education and no bad habits. 410 Dean street, Brooklyn, N. Y. Aug. 2

FOREMAN for enameling concern, especially experienced in enameling cast iron, with good practical recipes for dry and wet enamels; best references. "Enameler," care *The Metal Worker*, New York. Aug. 2

TINSMITH; first-class all around hand for steady position; inside or outside work; city or country. Harry Rosenbloom, 92 Madison street, New York. Aug. 2

By experienced STOVE SALESMAN; understands hot air heating and familiar on the road or on sample floor. J. G. Watson, Box 327, Suncoo, Ontario, Canada. Aug. 2

A TINSMITH, experienced in all branches of work, seeks steady position in New York or vicinity; inside work preferred; temperate and reliable; moderate wages. Frank Lockwood, 448 Hudson street, New York. Aug. 2

SHEET IRON WORKER who has just given up his own business would like steady position; outside of New York City preferred; able to lay out and cut own patterns; strictly temperate. E. F. H. Potheworst, 115 West Seventeenth street, New York. Aug. 2

Steady position as PATTERN FILER and FITTER; thoroughly acquainted with stove patterns and all kinds of small gating work in brass or metal; can give first-class reference. Samuel W. Bailey, 924 Barr street, Cincinnati, Ohio. July 26

TINSMITH, ROOFER and FURNACE WORKER; understands plumbing and pipe fitting; age 29; steady and competent. "Shalman," care Vogler, 216 West Eighty-fourth street, New York. July 26

PLUMBER; first-class; in country; \$2.50 per day; understands steam fitting and roofing. Geo. Schneider, 537 East Eighty-eighth street, New York. July 26

As FOREMAN or MANAGER, by a first-class plumber, steam and hot water fitter; 18 years' experience; have successfully solicited, estimated, designed and executed all manner of plumbing, steam and hot water heating; married; best of references. "R. R.," care *The Metal Worker*, New York. July 26

By a good, reliable PLUMBER; steam, hot water and hot air heating; 25 years' experience; a steady job in country shop or small city; wages reasonable; references. "B. C.," Box 234, Margaretville, Delaware County, N. Y. July 26

Young man, 23 years old, desires position with an up to date plumbing establishment as PLUMBER and STEAM FITTER'S HELP. ER; three years' experience; can read and work from heating plans and render excellent service on plumbing; reference if desired. "Render," care *The Metal Worker*, New York. July 26

By a young man; 12 years' experience at plumbing and tinning; license for Massachusetts. L. Hemming, Springfield, Mass. July 26

By a TIN and SHEET IRON WORKER. Charles B. Garrison, Atlantic City, N. J. July 26

By a first-class, sober, reliable PLUMBER, STEAM and HOT WATER FITTER, capable of taking charge of shop; references. "E.," Central and Elm streets, Gardiner, Maine. July 26

TINSMITH and ROOFER; understands in and outside work. B. Marcus, 55 Forsyth street, New York. July 26

By PLUMBER in country. Geo. Conlin, 499 West 124th street (rear), New York. July 26

As FOREMAN, JAPANNER and STRIPER on tinware, or lithographic tin plate decorator in all its branches for cans, seamless boxes, &c.; 23 years' practical experience. Daniel F. Calahan, 71 Schaeffer street, Brooklyn, N. Y. July 26

By a first-class CORNICE and SKYLIGHT MAKER for in and outside work; can do draining and cutting. Rob. Reinholz, 33 Cedar street, Fitchburg, Mass. July 26

A young man, strictly temperate, honest and reliable, would like a steady position at plumbing, steam or gas fitting; union man. Robert S. Gregory, Cranbury, Conn. July 26

By young man, steady, sober and honest, who has had 5½ years' experience at plumbing in a country shop. Theo. T. Livsey, 2 New Fenner avenue, Arlington, R. I. July 26

In retail hardware store as MANAGER or BOOKKEEPER; have had seven years' experience; can furnish best of reference; am at present employed as manager. "Manager," 5275 Sallsbury street, Raleigh, N. C. July 26

A BARGAIN.

For Sale. A well established Tinning, Plumbing, Heating and Stove business, of 19 years, in one of the busiest towns in Maryland, on main line of B. & O. R. R. Cash trade, large profits, no opposition: sales \$1800 last year. This is a chance of a lifetime. \$8,500 will buy buildings, stock, tools and good will. Building has frontage of 70 ft., depth 60 ft.; two storerooms, 20x60, and dwelling, 35x60, ware room in rear, 32x32, and tin shop, 20x60. One storeroom is renting for \$250. Terms one-half cash. Must be sold at once. Reason for selling, am going into the manufacturing business in New York State.

Address "WALLACE,"
Care The Metal Worker, New York.

FOR SALE.

Plumbing, Heating and Tinning business in a growing town of 4000 population in Eastern Mass. Town has water works and is putting in sewers. Only shop in town. Is an extra good chance. Have a good set of tinner's and piping tools, stoves, tinware, etc. \$600 buys it if taken now. Will sell on easy terms. Good reason for selling. Address

BOX 185, Billerica, Mass.

FOR SALE.

An old established Stove, Furnace, Tinware and Plumbing business, in a well located store in the town of Dover Plains, N. Y., on the Harlem R.R., doing a very good local business and having no competition. An excellent opportunity.

Address JOHN WILLIAMS,
Dover Plains, N. Y.

Something New.

Just the thing for tinner, cornice makers and sheet metal workers. No long hours poring over old foggy text books or working deep mathematical problems, but a simple, practical course of instruction in sheet metal pattern cutting, taught by mail. Course of thirty-three lessons, including one hundred plates 13 x 18 inches, covering the subject completely, for the exceptionally low price of \$16.50. Write to day for full particulars and free sample plates.

THE HOME INDUSTRIAL SCHOOL, Canton, O.

A BARGAIN.

A complete set of Tinner's Tools at one-half price. Some have been in use one year. They are good as new. Write for list at once. Also one Eb Slide Trombone Brass Horn I wish to sell. It cost \$18.00: will take \$5.00. It is in good shape.

W.M. A. JOHNSTON, Williamson, W. Va.

Tinsmith's Shop For Sale.

Roofing and Cornice Shop for sale. Good jobbing trade. In a good location on the West Side on 8th Ave. Full stock of tools, consisting of brake, etc. Will sell cheap to quick buyer. Reason for selling, owner leaving city. Inquire

M. GARDINER,
640 Greenwich St., New York.

FOR SALE.

A valuable manufacturing property, situated at 23d and Smallman streets, Pittsburgh, Pa. Remarkably well located as to shipping facilities, consisting of new steel constructed building 118 x 154 feet, thoroughly equipped with suitable machinery and tools for working in sheet metals. This establishment has a long ground lease, on very favorable terms and a large trade that will naturally follow it. It is the only concern in the Pittsburgh district, with all machinery for making corrugated conductor pipe, eaves trough, ridge roll, &c. This is an opportunity to secure a bargain for one desiring a business that can be operated at once. Any one caring to investigate, with object of buying the building, machinery, &c., or any practical party with capital, caring to take an interest in the business, please address

H. L. IRWIN,
Receiver for Marlin & Co., Inc., Pittsburgh, Pa.

FOR SALE.

1 10-ft. Capitol Gutter Beader and Former.
1 20-ft. Squaring Shears.
1 42-ft. Improved Sheet Iron Folder.
1 20-ft. Miller Square Pan Folder.
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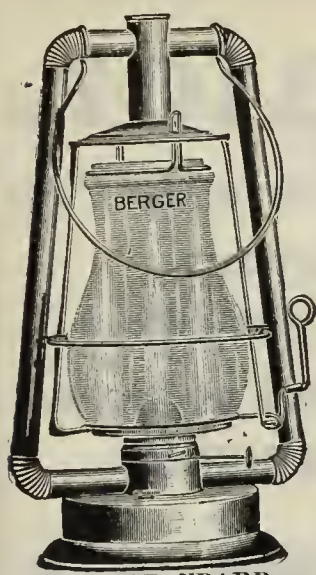
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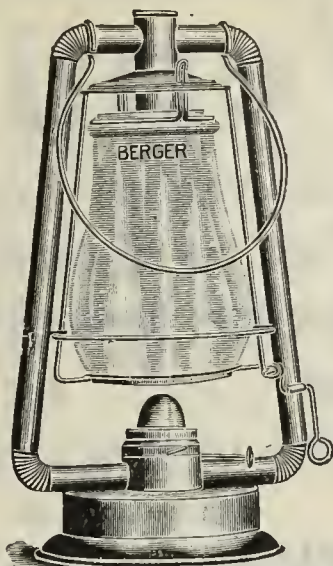
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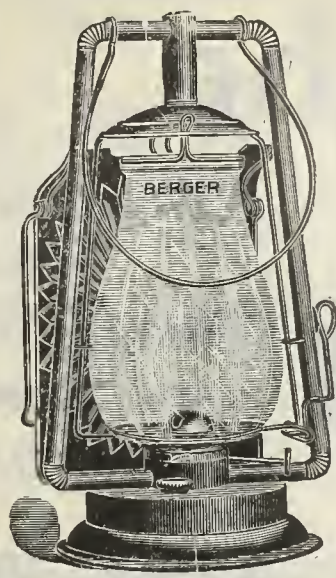
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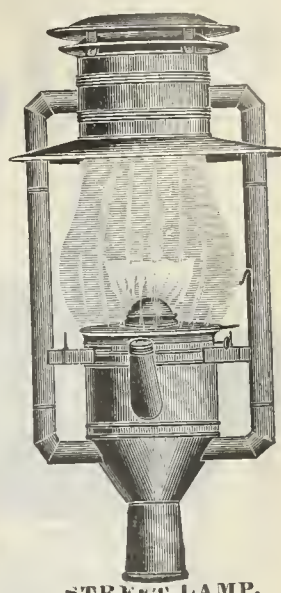
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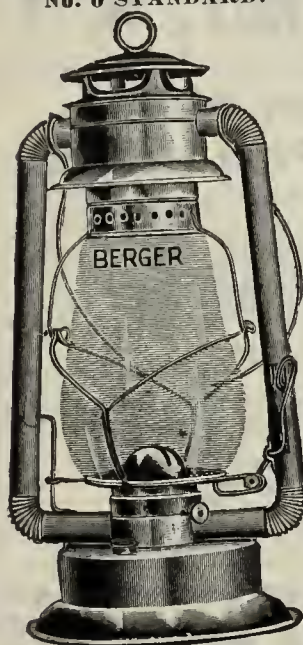
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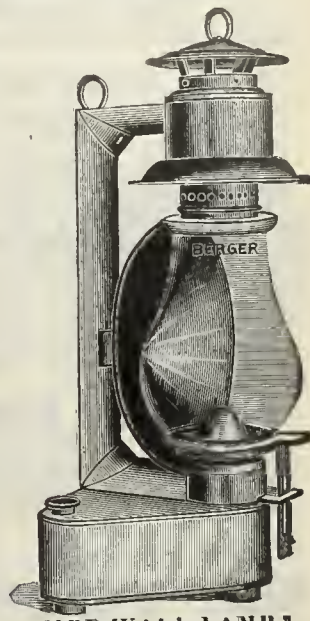


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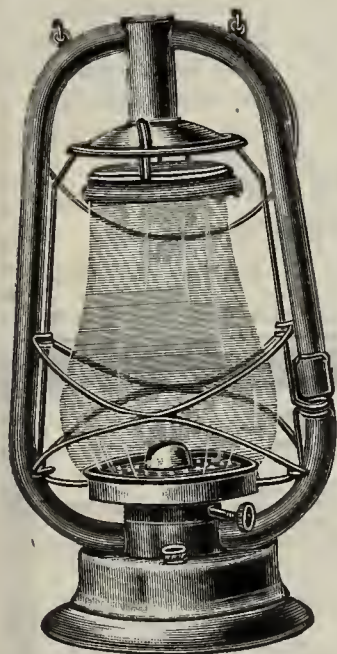
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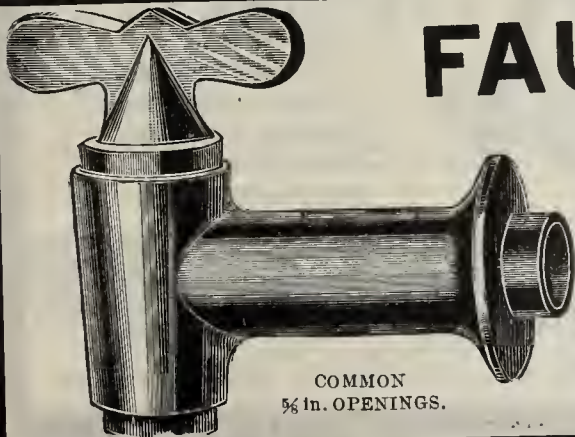
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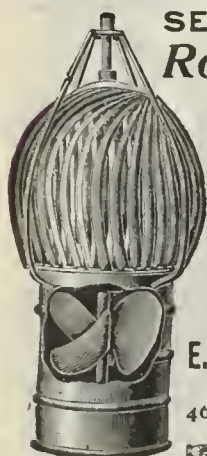
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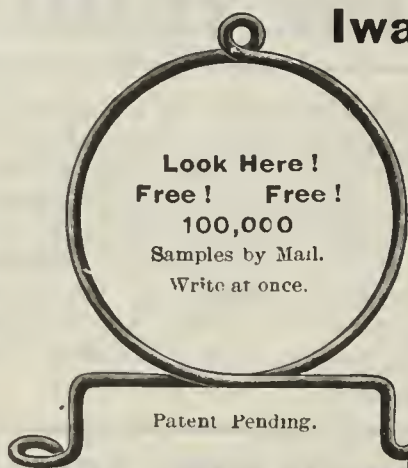
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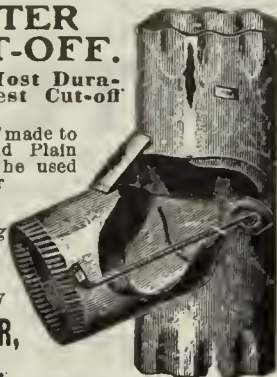
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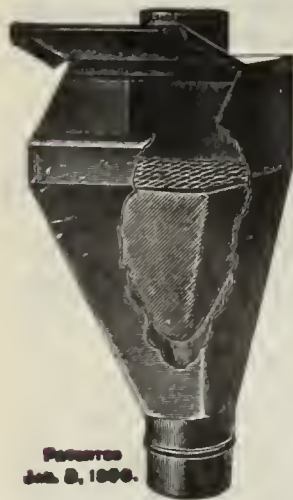
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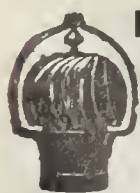


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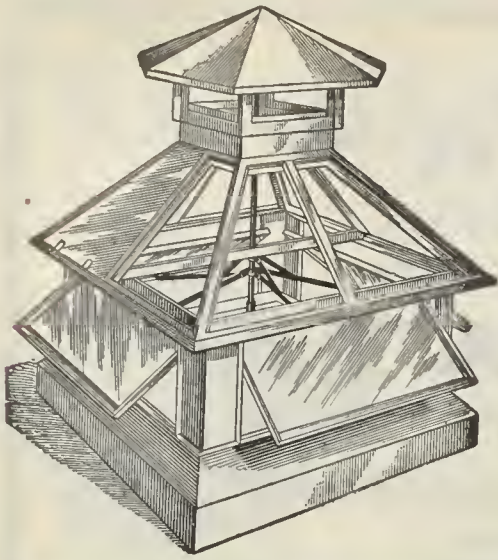
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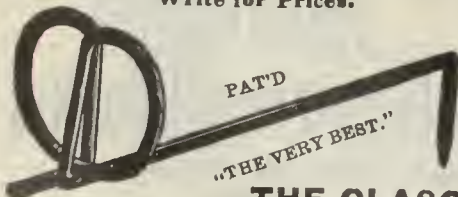
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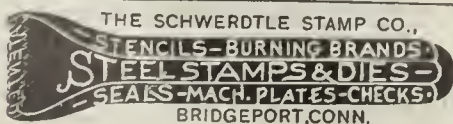
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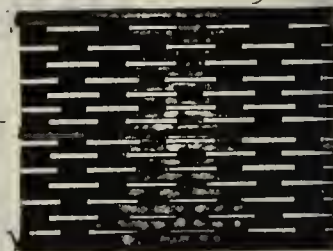

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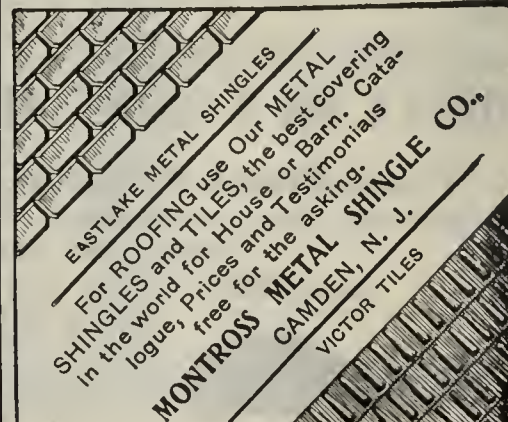


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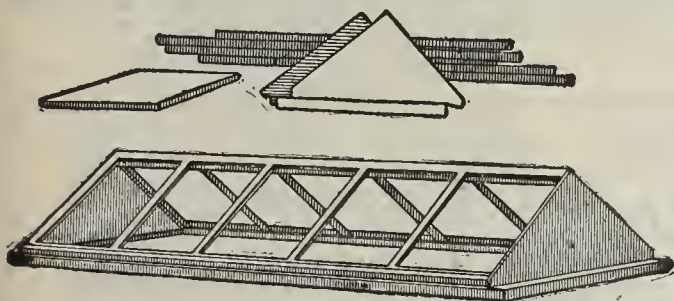
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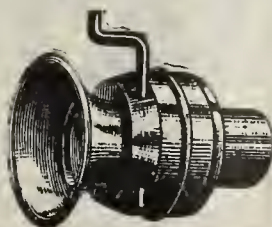
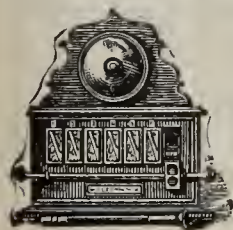
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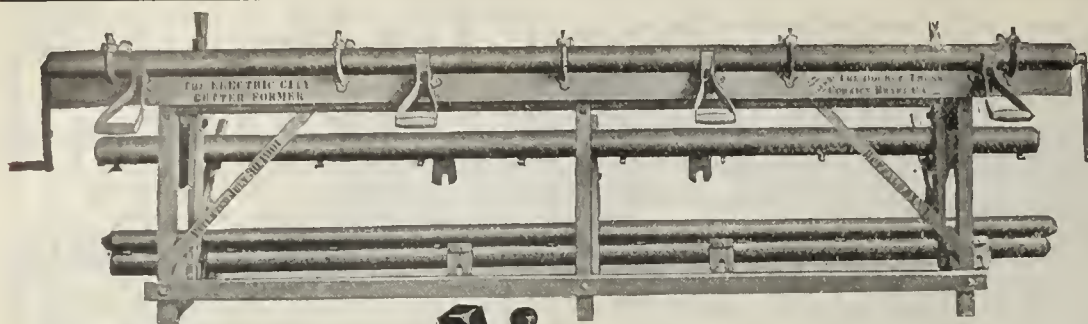
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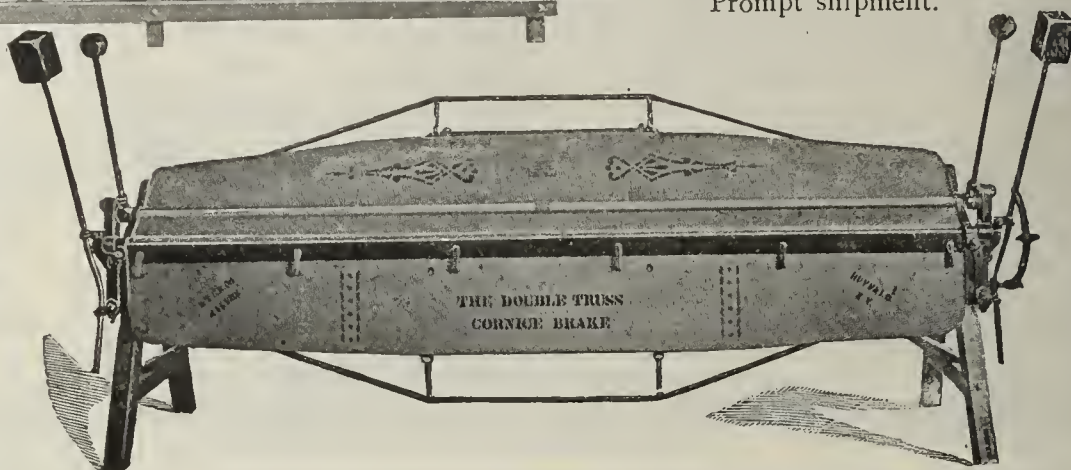
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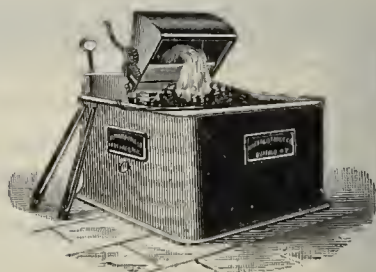
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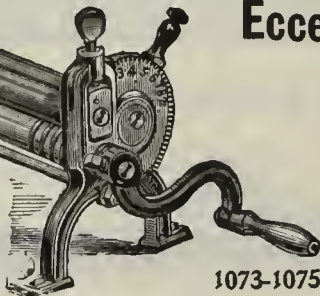


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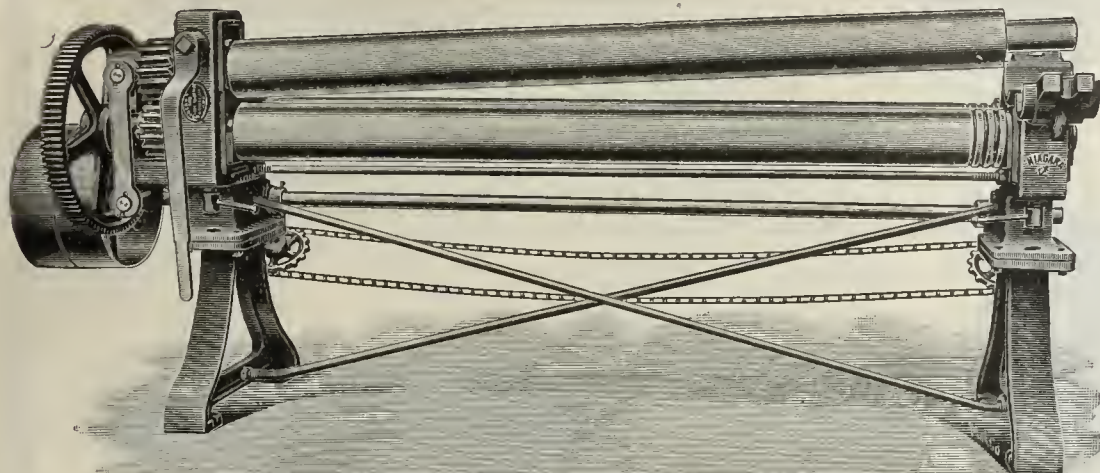
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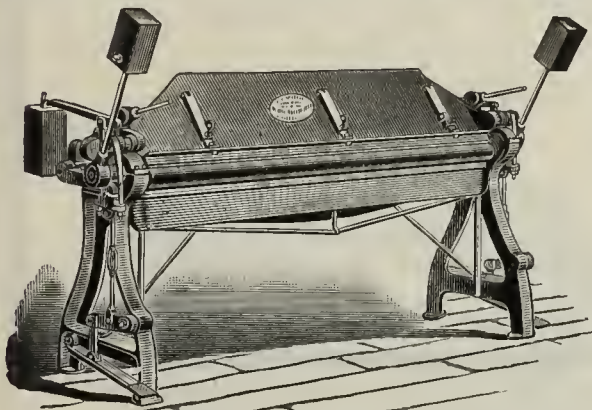
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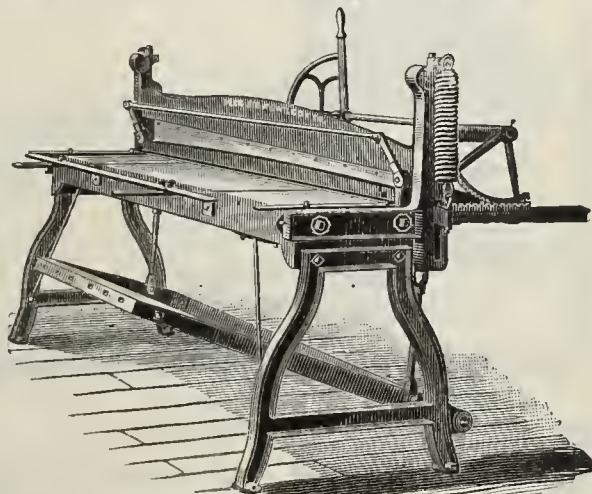
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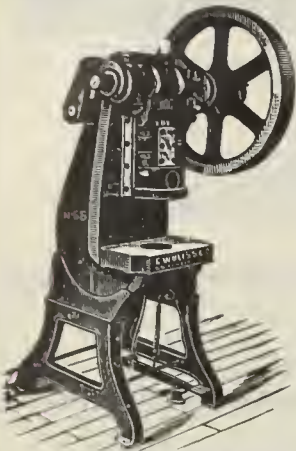
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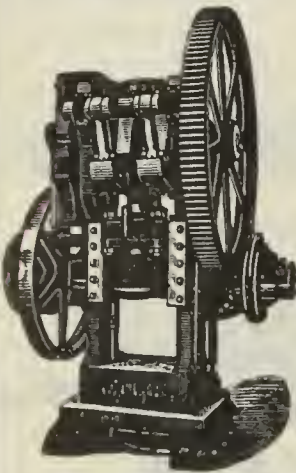
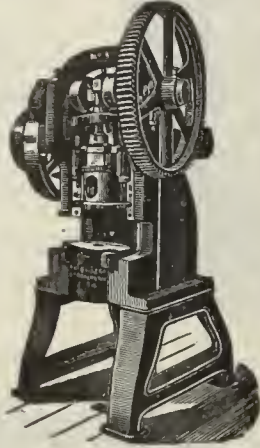
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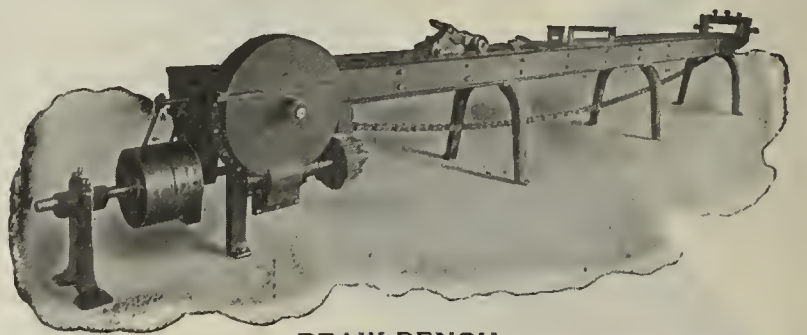
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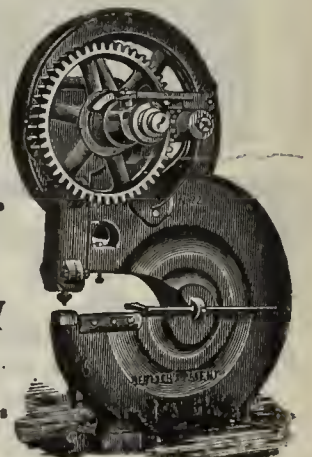
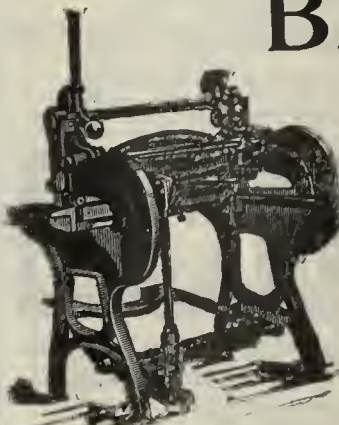
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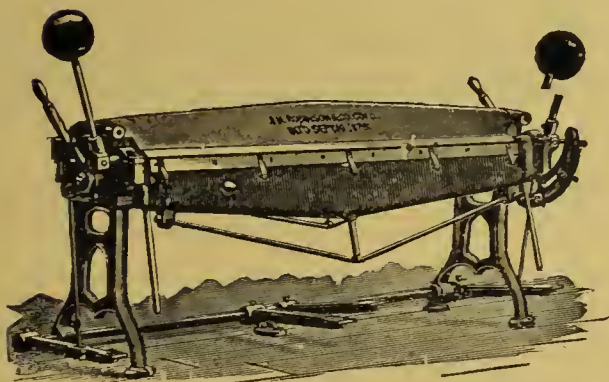
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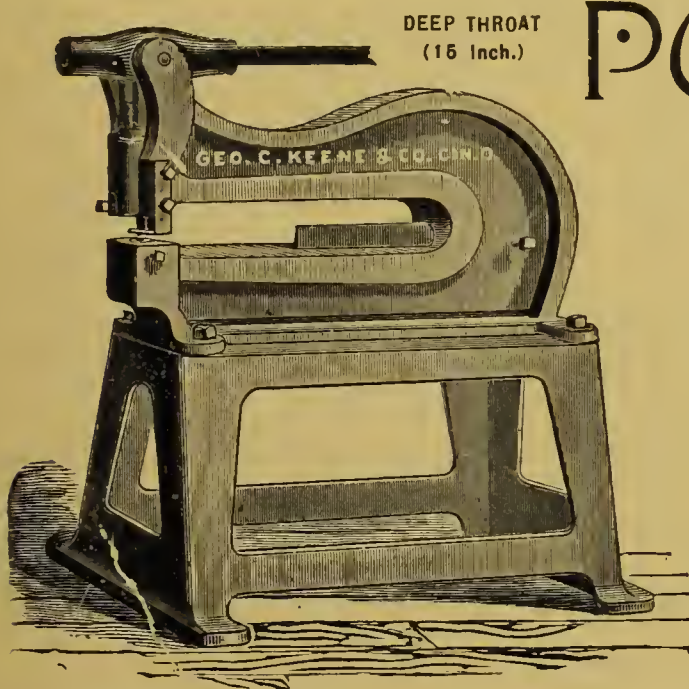
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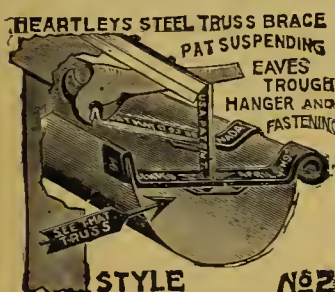
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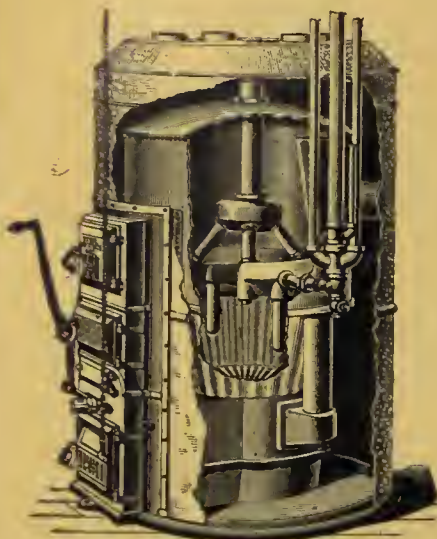
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If you want the best line; the line with the most attractive and progressive selling features, look into the merits of the

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Line of Ranges,

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Hot Air and Combination Furnaces.

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Do you know that the Glenwood line is one of the largest in the United States, and is composed of five popular selling grades with sizes ranging from 16 to 34 inch pots, including furnaces for coal, furnaces for wood, combination warm air and hot water heaters, made portable style or for brick setting. Our heating engineer is available for consultation when planning the heating and ventilating for schools or large public buildings.

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**Genuine Charcoal Iron
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McCLURE & CO.,
Manufacturers of Tin Plate,

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The Metal Worker

A WEEKLY JOURNAL OF THE
ROOFING, CORNICE, TIN, PLUMBING AND HEATING TRADES.

With which is Incorporated The Stove and Tin Trade Journal, the Sheet Metal Builder, and Metal.

OL. LVIII.
 NUMBER 6.

NEW YORK AND CHICAGO, AUGUST 9, 1902.

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With Hill's Solid Dies $\frac{1}{8}$ to 3 inches.

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The Gorton Side Feed Boilers

FOR STEAM AND HOT WATER HEATING.

INVESTIGATE FOR YOURSELF.
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 Heating Specialties. American Steam Gauge & Valve Mfg. Co., Blsmark St., Boston, U. S. A.

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 ELEVATOR VALVES, PRESSURE VALVES
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 REDUCING VALVES, ARATORS
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Because they lessen domestic toil and have uniform
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JENKINS IMPROVED AUTOMATIC AIR VALVES.



Suitable for high or low pressure. Take
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When you see these Trade Marks
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ROUND OAK

Standard of America

To the Furnace Dealer
who would like
to get hold
of a furnace
that excels in
economy, durability
and heating capacity—
owing to tight fitting
and high class
workmanship.

We should like
to send
some evidence
of what this
furnace has
done — and
is doing in some
towns, where the
cheap furnace
once had
the floor.

Estate of
P. D. BECKWITH
DOWAGIAC, MICH.

Makers of Good Goods Only.



*Doe-Wah-Jack is early taught by his father
how to shoot with the bow and arrow.
(Continued.)*

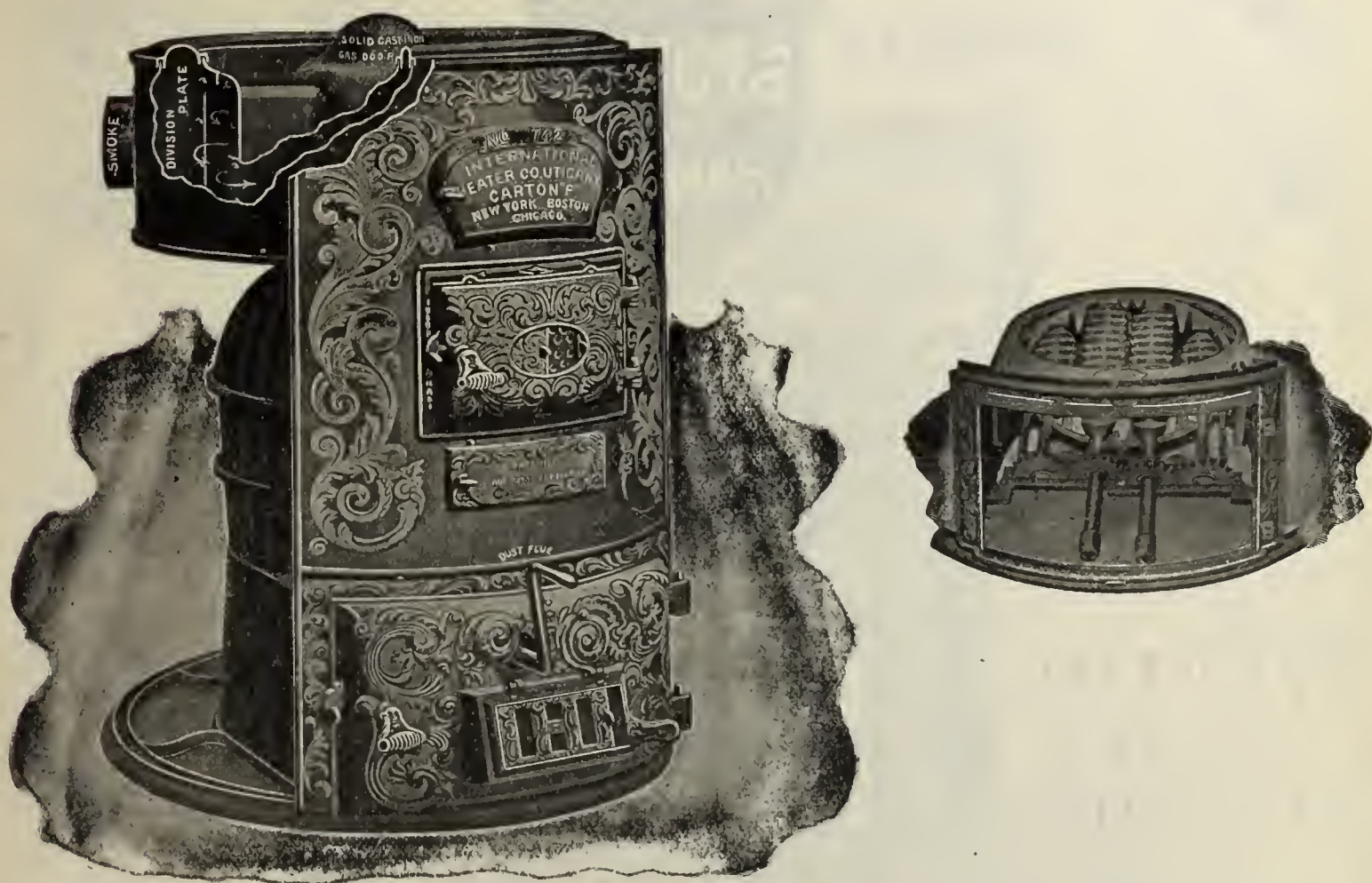
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FRANK B. SWICK

It is far easier to effect a single sale than to gain a permanent customer.
Glue them to you—make them stick—Sell Good Goods—CARTON FURNACES, for instance.

CARTON "F"

WARM AIR FURNACE.



THERE ARE MANY "TALKING POINTS" ABOUT THIS HEATER.

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Look at the gas dome—a one-piece casting—no chance for an argument here.

Moderate in Price.

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CONTAINS COMFORTABLE WORDS ABOUT STOVES
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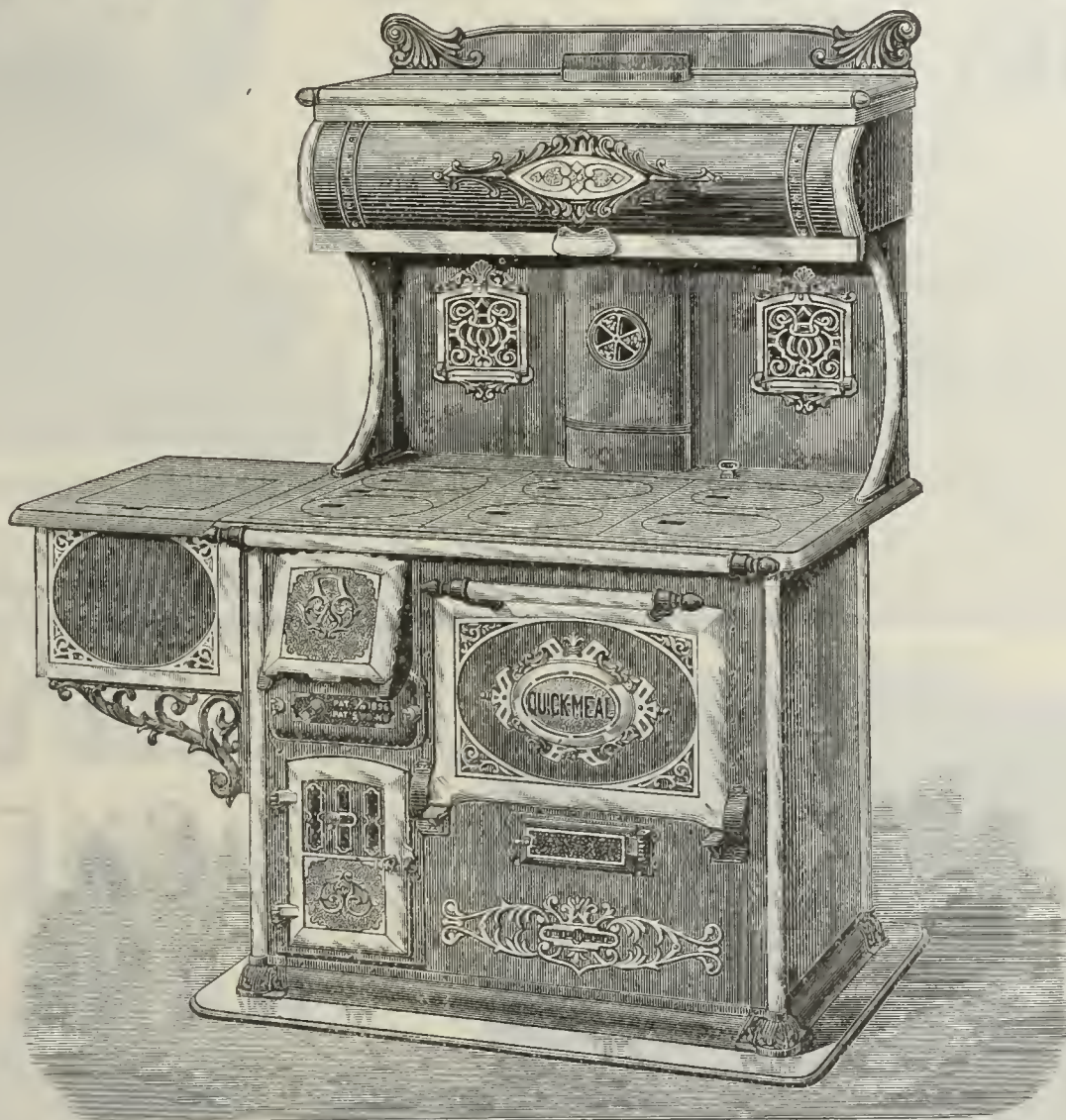
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“THE OLDEST AMERICAN STOVE MAKERS”
ALBANY, N. Y. : AURORA, ILL.

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Have the Appearance that Attracts Attention.

Have the Features to Talk About.

A FEW REASONS WHY QUICK MEAL RANGES ARE SO POPULAR:

FIRST.—Their construction is entirely different from other ranges. They are made by Steel Range makers.

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THIRD.—Their designs are new and of the latest pattern. They are built from a practical standpoint and have many features that attract attention and furnish points to talk about.

QUICK MEAL STEEL RANGES ARE GROWING IN POPULARITY EVERY DAY.

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The **HEAVIEST of THEIR KIND.**

THE KING HEATER

SOLID, SENSIBLE, SATISFACTORY.
Fire pots 16 to 22 in.

"A Regular Frost Killer."

We make every style, shape and size of Cannon Stoves.
8 to 22 in. Fire Pots.

THE CHIEFTAN

IS A SMOKE CONSUMER.
14 to 20 in. Fire Pots

It is a very economical stove and is the only Cannon stove that is a specialty.

We live where iron is plenty and we use lots of it.
That's why our Cannon Stoves outlast others.

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PITTSBURGH, PA.

Western Sales Agent, W. D. SAGER, 38 to 40 Michigan Street,
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CITY BUCKEYE RANGE.

**For Hard, Soft Coal,
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MADE IN 17 AND 19 INCH OVEN.

Square Top and Bracket Reservoir
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AN ATTRACTIVE PIECE
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A Ready Seller.

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OHIO STOVE CO.

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MILLER GAS RANGE

Is as economical in the consumption of gas as any Range.

The Baking is simply perfect, and cannot be excelled by any other Range.

The Broiling is grand, broiling any kind of a steak in from seven to ten minutes.

Is durable and simply constructed, so that any one can learn to run it in a few minutes.

Has drop doors which form shelves in front of the ovens, so that you can baste without holding the pans.

Is the handsomest Range ever built.

The oven can be drawn out from the front, so that if it should ever need repairing or replacing it can be done without cutting the Range all to pieces.

The price is as low as any one can build a first-class Range for.

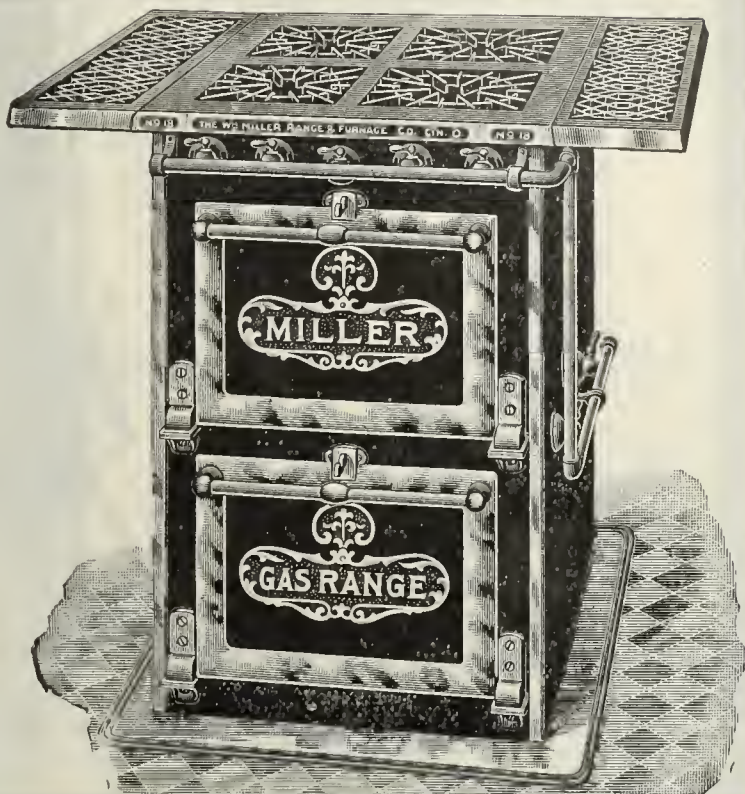
The only "All Steel" Gas Ranges in the Market.

MANUFACTURED BY

The WM. MILLER RANGE & FURNACE CO.

Write for Catalogue and Prices.

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"THE QUEEN" HOT BLASTS

ARE ENTIRELY NEW.

They have all the good features of the most popular stoves of this class. They are **made only in the highest grade** and of the **heaviest and best materials**.

SPECIAL FEATURES.

Ash Pit Door with our Patented Air Tight Register, through which the grate can be operated and clinkers removed instead of fishing them out through the top door with a long poker.

Large Ash Pit provided with **Large Ash Pan**.

Urn, Nickel Ring and Nickel Plating are first-class and give the stove a fine appearance.

They are better fitted, better finished than any other stove of its class, and **the Price is Right**.

Made in three sizes, 15, 18 and 20. Bodies of Wood's Refined Sheets.

The Portsmouth Stove & Range Co., Portsmouth, Ohio.

MORLEY BROTHERS, Wholesale Agents for Michigan, Saginaw, Mich.

The Busiest Stove and Range Makers on Earth.



The Dangler Oil Heater, 1902

Height, 27 in.
Weight, 10 lbs.
None better.
Made of polished
Steel, with either
Brass or Tin
Tank.



Ornamental,
Durable,
Powerful and
Simple in
Operation.
For sale by
Jobbers and
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THE DANGLER STOVE & MFG. CO., CLEVELAND, OHIO, U. S. A.



1903 Reliable Oil Heaters

RELIABLE Oil Heaters have always been conceded Leaders. This season they are finer than ever. TO THE RELIABLE IS DUE THE CREDIT OF THE PERFECTION AND POPULARITY OF THE OIL HEATER TO-DAY. Our Gas Heater line is the largest and most complete. Write for catalogue and prices.

MADE BY

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SOLD EVERYWHERE

JEWEL STEEL RANGE

... Made in Chicago by ...

GEORGE M. CLARK & COMPANY.



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With High Closet
and
Left Hand Reservoir

Made Also With
Right Hand Reservoir

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For Soft Coal, Hard Coal and Wood.

Besides being newest and best are

DIFFERENT

from any ranges you've ever seen or sold.

WRITE FOR OUR CATALOG.
WAIT FOR OUR SALESMAN.
ORDER SAMPLE.

GEORGE M. CLARK & COMPANY,

73 LAKE STREET, CHICAGO.

**HOT WATER
AND
HOT AIR**



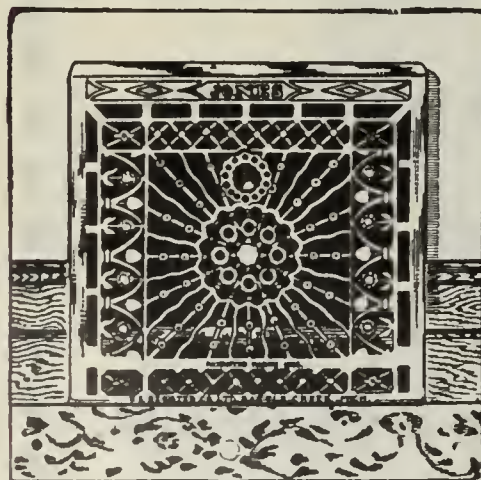
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Suitable for Large or Small
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Heat Water Quickly.
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No Joints Inside to Leak.

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**THE
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THE FURNACEMAN'S CHOICE.

They have Double Ventilated
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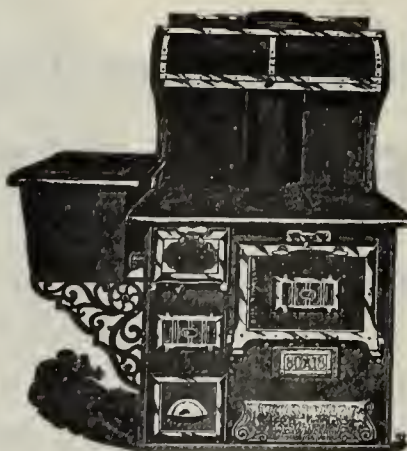
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Sold by Jobbers and Dealers everywhere.



I Will Give the Public the Benefit.

Having completed patterns for my 1902 line, I will close
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400 LB. WILLARD STEEL RANGE for \$15.00.

This is Less than 4c. per pound.

They have six 8 inch lids. Oven, 17 x 21 x 12. Top Cook-
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EVERY ONE GUARANTEED. BUY NOW AND SAVE 100%.

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STOVE DEALERS WILL SAVE MONEY IF BUYING FROM THE
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MAIL ORDERS PROMPTLY FILLED.

Manufacturers
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A FULL LINE OF STOVE REPAIRS, UP TO DATE.

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Royal Heaters.

HART & CROUSE CO.,

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The Leading Line of Heating Apparatus.

**HOT WATER,
STEAM,
HOT AIR.**



Wanted—A Hustler.

There's good money for any responsible business man who takes the agency for our famous "Built to Bake" Household Ranges. These ranges almost sell themselves, for they've more good points than all others combined. Write to-day for catalog and price-list.

The WHITE-WARNER CO., Taunton, Mass.

Natural Gas is Cheaper Than Coal,

Providing You Use the Proper Appliances.

We are sending out Catalogue No. 36, showing over one hundred different designs of Gas Stoves and Ranges that are economical and efficient.

H. ADLER COMPANY,

Manufacturers of Acme Gas Stoves and Ranges,
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WESTFIELD, MASS., U.S.A.

Catalogue furnished only upon application to
Heating Contractors, Engineers and Architects

92 Pages. Size 9 x 12 Inches.

**COTTAGE
BOILERS.**

STEAM BOILERS (8 SIZES), 550 SQ. FT. RADIATION SUPPLIED.
WATER BOILERS (8 SIZES), 900 SQ. FT. RADIATION SUPPLIED.

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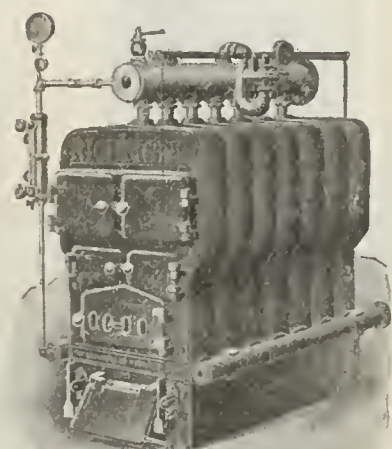
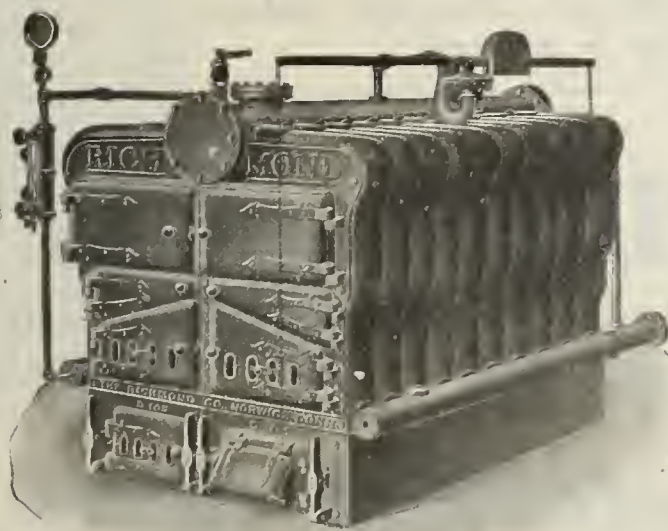
SALESROOMS :

THE H.B. SMITH CO.,

**133 CENTRE STREET,
NEW YORK.**

**510 ARCH STREET,
PHILADELPHIA.**

THE season is now approaching when you will be *too busy* to consider the fine points of distinction between one boiler and another.



Why should you postpone another day informing yourself fully about the good points of

RICHMOND BOILERS

SEND FOR OUR NEW **1902** CATALOGUE. DON'T FORGET
TO ASK FOR PRICES ALSO.

THE RICHMOND COMPANY, NORWICH,
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NEW YORK, PHILADELPHIA, PITTSBURGH, CHICAGO, ST. LOUIS,
738 Park Row Bldg. 18-24 So. 7th St. 210 Ferguson Bldg. Chicago Heater & Supply Co., Rumsey & Sikemeier Co.

The New WALKER BOILER for Steam:for Water

A boiler to keep fire with little attention, to easily work up to its full rated capacities, and a margin to spare for emergencies—that's our boiler. The price may be lower than you are paying for boilers of equal size. Our Walker Boilers have triangular grates, deep fire boxes, push nipple joints, and easily cleaned flues, construction is first-class, and castings of superior quality.

SOLD ON HONEST RATING PLAN.

Will be pleased to send catalogue and discounts [Correspondence] and inspection invited.

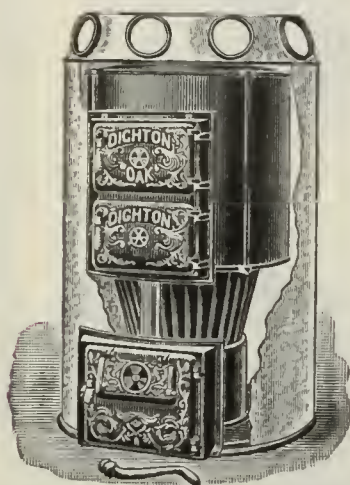
WALKER & PRATT MFG. CO.,

31-35 UNION ST., BOSTON, MASS.

"Finest Factory in this line in the world."



WALKER BOILER.



THE "Dighton Oak" Furnace

Dimensions and List Prices:

No. of Furnace.	Diameter of Fire Pot.	Height of Castings.	Diameter of Casings.	List Price of Castings.	List Price of Casings.	List Price of Wood Grates.
190	20 inches	51 inches	36 inches	\$ 48 00	\$ 8 00	\$1 68
210	22 "	53 "	39 "	56 00	9 00	2 08
230	24 "	51 "	42 "	68 00	11 50	3 36
250	26 "	53 "	46 "	78 00	14 00	4 17
282	29 "	60 "	52 "	110 00	17 00	6 67
310	31 "	62 "	52 "	135 00	17 00	7 50

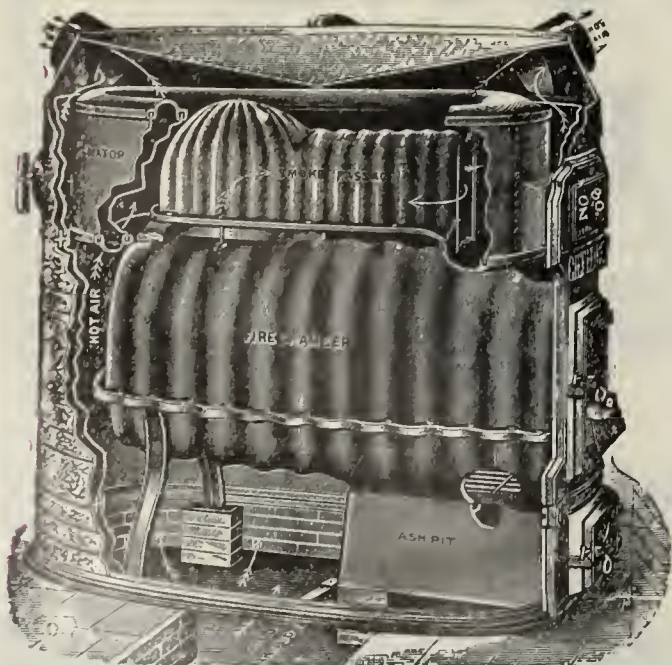
The "DIGHTON OAK" is made especially for burning wood, but is as well suited for coal, coke or gas for fuel. The general type of construction is exactly the same as the regular "DIGHTON" which has become so well-known as a durable and economical heater. The outside measurements, flue construction and flue measurements are the same; the large double feed doors allow of taking in large chunks of wood or a 4-foot stick cut once.

The wood grate is not fastened to the fire pot or coal grates; it rests upon the triangular grate bars, and by easily turning these bars the fire is thoroughly cleaned.

If at any time it may be desirable to use coal instead of wood as fuel, this grate can be removed in a minute's time through the feed door and set aside until such time as you wish to change to burning wood again.

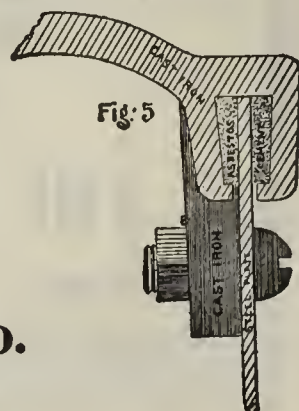
DIGHTON FURNACE CO., Taunton, Mass.

GILT EDGE

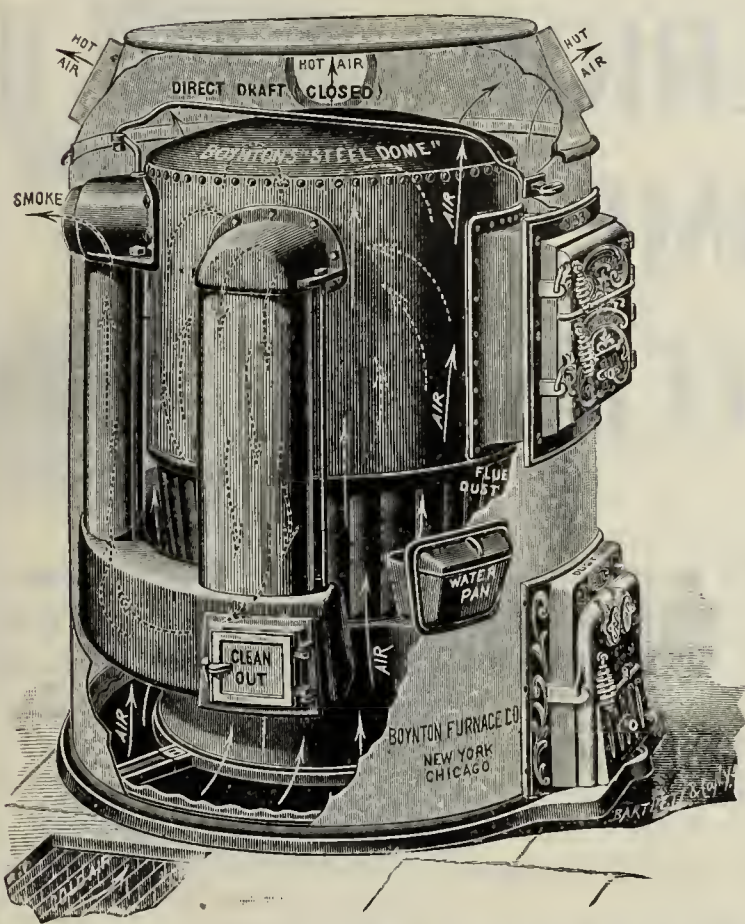


stands for best when applied to furnaces. The many dealers who have installed and the thousands of householders whose homes have been heated by our furnaces show they like the Gilt Edge, as will be seen by the testimonials they have written. Let us send you a few of them.

The Keystone Joint used in Gilt Edge Furnaces is the only permanent gas tight steel and cast iron joint on the market.



R. J. Schwab & Sons Co.
MILWAUKEE

BOYNTON'S**Steel
Dome
Furnace**

The best example of the down draft type of wrought metal furnace in the market. The wrought metal work is made of heavy gauges of the best steel plate, with the most thorough workmanship, leaving no possibility of a leakage of gas. Catalogue and prices will interest you.

The BOYNTON FURNACE CO.,
NEW YORK. CHICAGO.



IF YOU ARE NOT SELLING THE

Peck-Williamson Underfeed Furnace

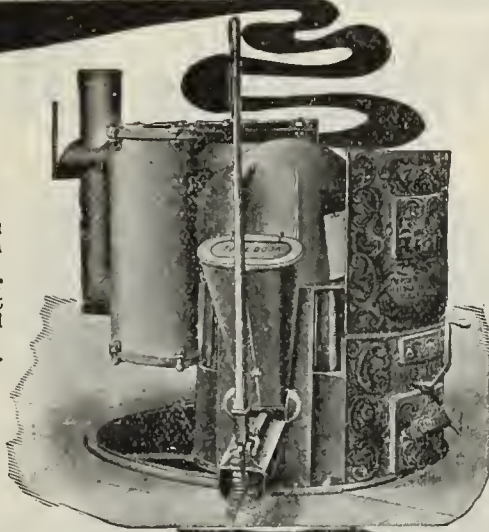
you have not the trade and are not making the money you might. Just a pull or two of the lever feeds the new coal from underneath.

The Underfeed Furnace consumes less fuel than any other furnace ever built. The coal is burnt more slowly. All the heat units from it, as well as from the smoke, are utilized and all smoke eliminated.

Our handsome booklet explains its splendid heating qualities and coal saving.

You may have this booklet and our special plans for selling. Ask for booklet about our Laundry Dryer also.

THE PECK-WILLIAMSON COMPANY,
CINCINNATI, OHIO.

**THE
HAXTON**

**A Steel Brick-Set Boiler for Steam and Water
Heating—Hard or Soft Coal.**

HAS AN ESTABLISHED REPUTATION.

SOLD ON MERIT.

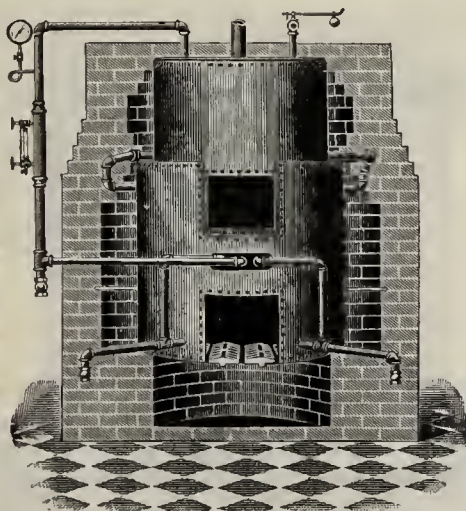
PRICES TO THE TRADE ONLY.**KEWANEE BOILER COMPANY**

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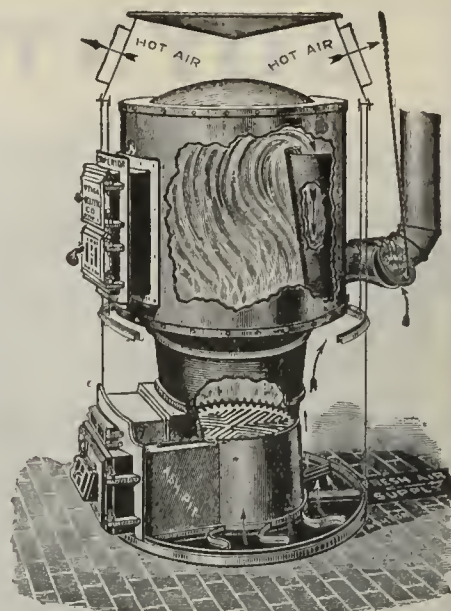
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MODEL HEATING CO.,
Philadelphia, Pa.
New York, N. Y.
Buffalo, N. Y.
Boston, Mass.





SUPERIOR DOME HEATERS



These Heaters were designed to supply a demand for a moderate-priced heater, more particularly adapted to heating small cottages, offices, stores or halls. When desired, these Heaters are fitted with large double doors for burning chunks of wood, boxes, crating or store refuse.

Send for complete catalogue and new discounts.

Exclusive Agencies given and protected.

UTICA HEATER COMPANY,

General Offices,
UTICA, N. Y.

NEW YORK CITY,
106-108 Beekman Street.

CHICAGO,
33 Dearborn St.

BOSTON,
24 India Square.

NOTHING BUT GOOD COMMON SENSE



Is needed in the selection of a Warm Air Furnace. A good many "**freak**" furnaces have been put on the market, but they do not live long. The **leading** furnaces to-day are **sensible, simple and practical**. We have carefully avoided **complicated** and **theoretical** constructions, and our furnaces have **never failed**. They are **easy to put up, easy to run and easy to keep in order**. If you want to buy **sensible furnaces at sensible prices** write us about it.

THE GRAFF FURNACE CO.,

Manufacturers,

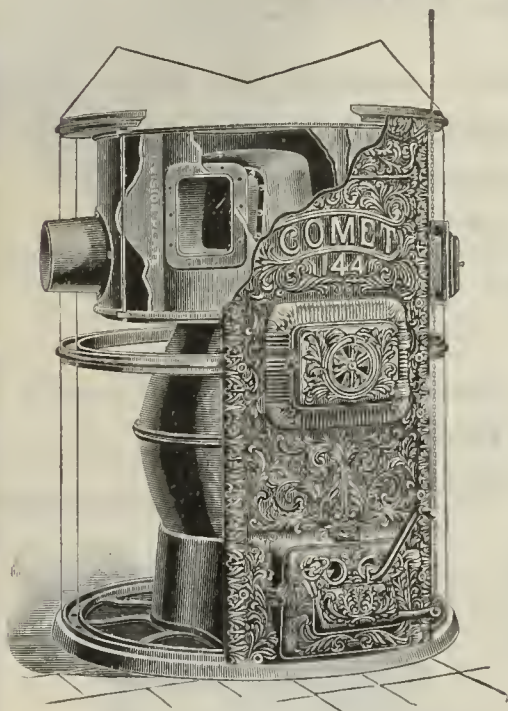
208 Water Street, New York.

THE STAMFORD FOUNDRY COMPANY

SINCE 1830 MAKERS OF CELEBRATED FURNACES, RANGES AND STOVES

THOUSANDS IN USE

RECORD EVERYWHERE ESTABLISHED

References to Many of Our Furnaces, Now and Through Past 25 Years in Continuous Service

COMET
Heavy Steel Drum

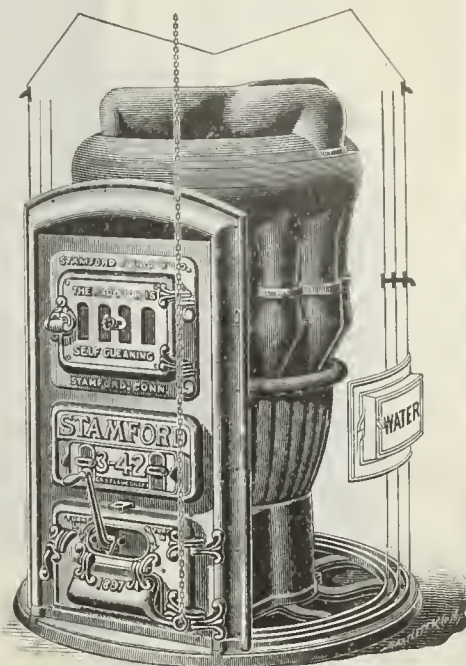
Both furnaces are well made—all exposed parts heavy. A generation of constant service establishes their record for durability, economy, powerful heating, easy to set, simple to operate.

The radiator of the STAMFORD ALL CAST FURNACE is a combined dome-tubular and cylinder construction of immense capacity and heating power.

The COMET radiator is made of heavy cold rolled steel. Fire pot and exposed parts especially heavy and durable.

The COMET is made for satisfactory service and not for PRESENT cheapness, ENDING IN EARLY DESTRUCTION.

OUR GUARANTEE follows everything we make, whether stoves, ranges or furnaces, and is established by our over 70 years' record.

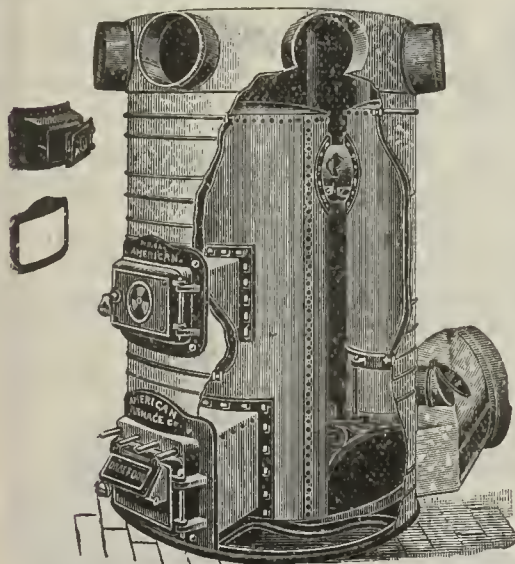


STAMFORD All Cast
Portable or Brick Set

This is the Celebrated American Improved

Send for Catalogue, Capacities and Prices

THE STAMFORD FOUNDRY COMPANY
STAMFORD, CONN.



Burn Hard or Soft Coal, or Coke. Large Doors.

Some Ripe Experience

Has come to us through watching the doings of dealers throughout the United States.

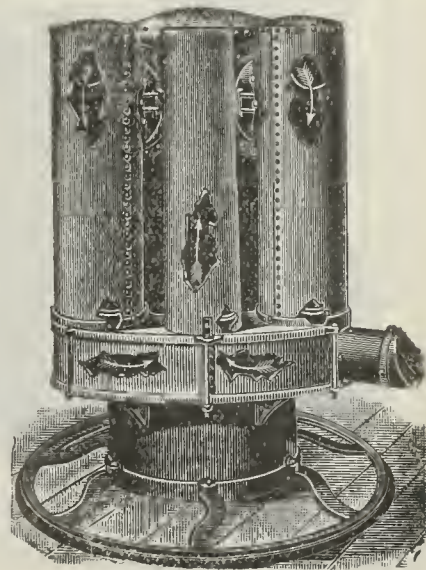
We find that the dealer who sells cheap furnaces not only loses ground in the furnace business but also has a falling off in his other lines.

On the other hand, we can say that the man who sells a good furnace and charges enough to do a good job will, in a few years, be the leading furnace man in his town and at the same time build up his other business.

The *American Furnace* is made for the better class of trade; is durable, clean and economical in fuel.

The American Furnace Co.,

1911-13 PINE STREET, ST. LOUIS, MO.



Large Radiators, easy to clean out

Write for prices and secure the agency before the other fellow gets it



Emperor Furnaces FOR WOOD.

Simple, Safe, Durable.

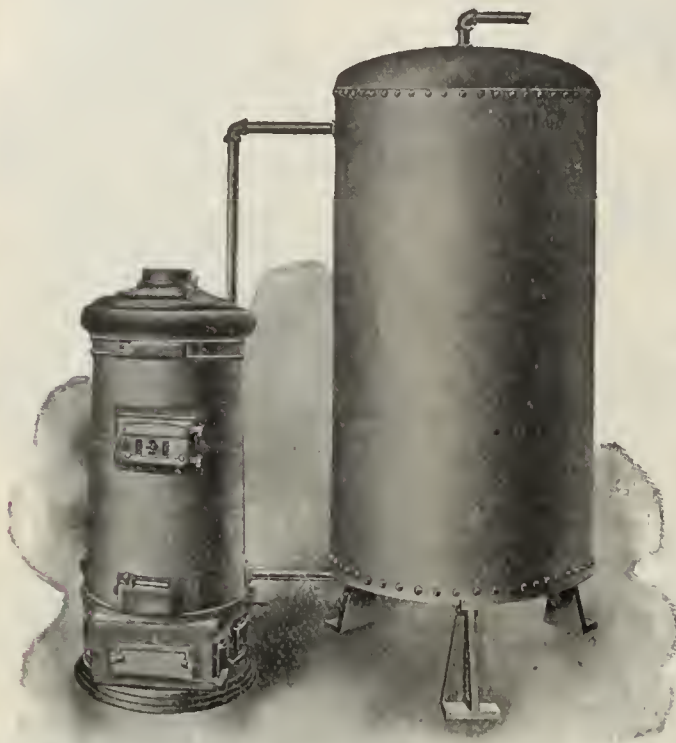
Economical in Fuel.

The Best and Cheapest Line of Wood Furnaces. . . .
Furnished for either Brick or Galvanized Iron Casing

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Bergstrom Bros & Co

NEENAH, WIS.



Ideal Premier Tank Heater.

Our New Ideal Premier Tank Heater

is now ready for the market, and we invite your critical examination of its various features of construction.

Send for 1902
profusely illus-
trated catalog.

AMERICAN RADIATOR COMPANY

Lake and Dearborn Streets,
Chicago, U. S. A.

New York.

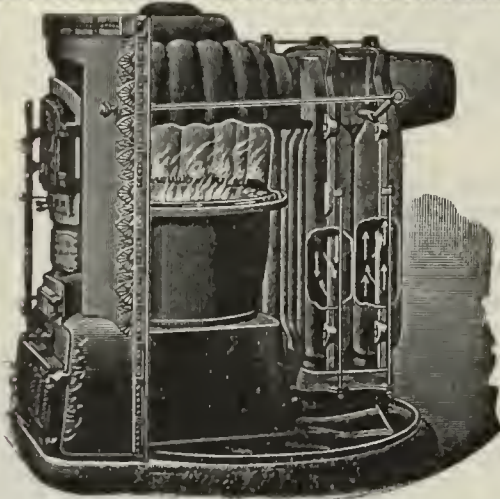
Philadelphia.

Buffalo.

St. Louis.

Minneapolis.

Denver.



Eastern Selling Agents:
GURNEY & CO.,
Washington, Hanover and Elm Streets, Boston, Mass.

COAL

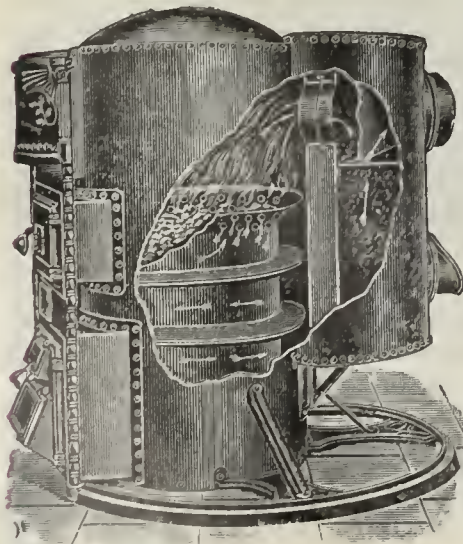
will be dear, no doubt, this winter. If you use a **BENGAL FURNACE** you need not worry, because your coal bills will be no bigger than when you used the other furnace and coal was cheap.

THE RADIATOR DOES IT!

Write for particulars.

FLOYD, WELLS & CO., Royersford, Pa.

NEW YORK OFFICE, 210 WATER ST., R. W. HILLMAN, Manager.



WEIR ALL GAS AND STEEL SOOT CONSUMING FURNACE.

THE HEAVIEST STEEL FURNACE MADE.

Absolutely gas and dust tight. A great heat-producer but a fuel saver.

MANUFACTURED BY

THE MEYER FURNACE CO.,

1300-1304 S. Washington St.,

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PEORIA, ILLS.

"The Handy Furnace Pipe."

MADE WITH A VIEW OF BEING SAFE.

The saving of labor in putting it up really makes it the cheapest hot air pipe on the market.

MANUFACTURED BY

F. MEYER & BRO. CO.,

SEND FOR CATALOGUE.

PEORIA, ILLS.





Absolutely Right.

"Gurney" Heaters are made in various kinds, in all sizes, but only in one quality, **the best**. We never sacrifice quality for price—and the prices are no higher than for many inferior makes.

"GURNEY" HEATERS,

BRIGHT IDEA 400 SERIES and DORIC.

offer you more business opportunities than any other heater—the best apparatus for each class of wants, which can be easily sold, not on claims, but on what it has done and is daily doing; with prices no higher than those of many inferior makes.

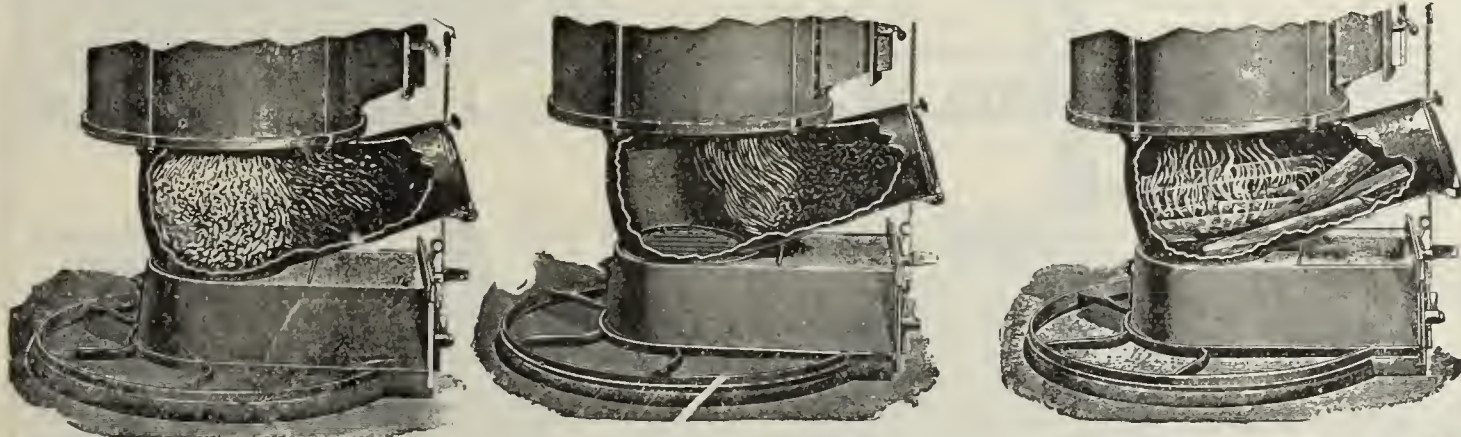
Write for full particulars and latest trade catalogue.

Gurney Heater Mfg. Co.,

74 Franklin St., Boston.

111 Fifth Ave., New York City.

Western Selling Agents, James B. Clow & Sons, 358 Franklin St., Chicago, Ill.



THREE PRACTICAL USES

to which the *Combination Fire Bowl* and *Coking Magazine* used on the **PATRIC FURNACE** may be put.

The first cut shows soft coal undergoing coking process in magazine, with coked coal in main bowl. *A great fuel saver.* Second cut illustrates fire carried only in magazine, for light Spring and Fall heating, *a great convenience.* Third illustration shows furnace used for wood. *A success for twenty years.*

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THE PATRIC FURNACE CO., = Springfield, Ohio.

NONE CAN COMPARE

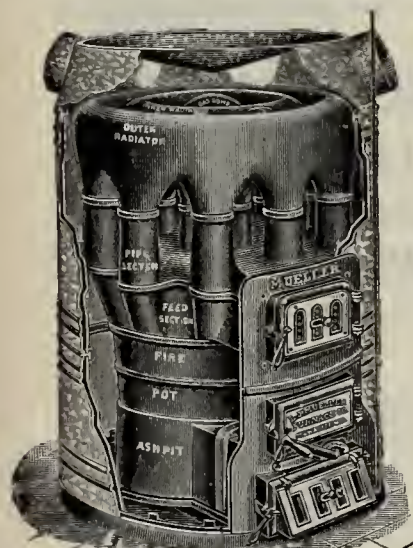
WITH THE

MUELLER Furnaces and Boilers.

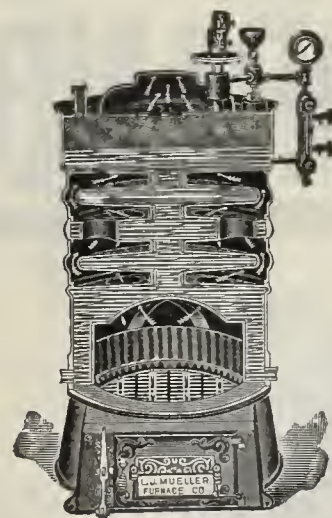
Sold On Their Merits

Heaters in all styles. For all kinds of fuel.

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All Cast Iron Double Radiator.



Established 1857

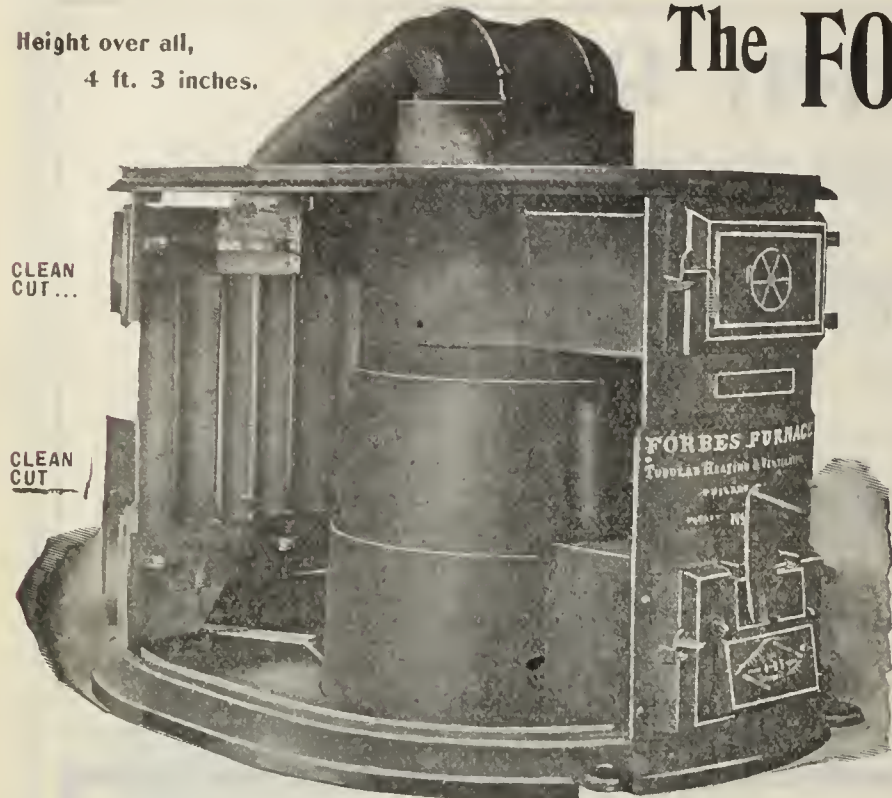
Everything in the Heating Line.

L. J. MUELLER FURNACE CO.,

180 Reed St.,

Milwaukee, Wis.

Height over all,
4 ft. 3 inches.



The FORBES FURNACE.

You run no risk in putting in the
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When properly installed we guarantee them in every case.

They are constructed entirely of cast iron.

No sheet iron drums.

Our radiating tubes are $\frac{1}{8}$ in. thick, and will wear for years.

Specially suited for low cellars.

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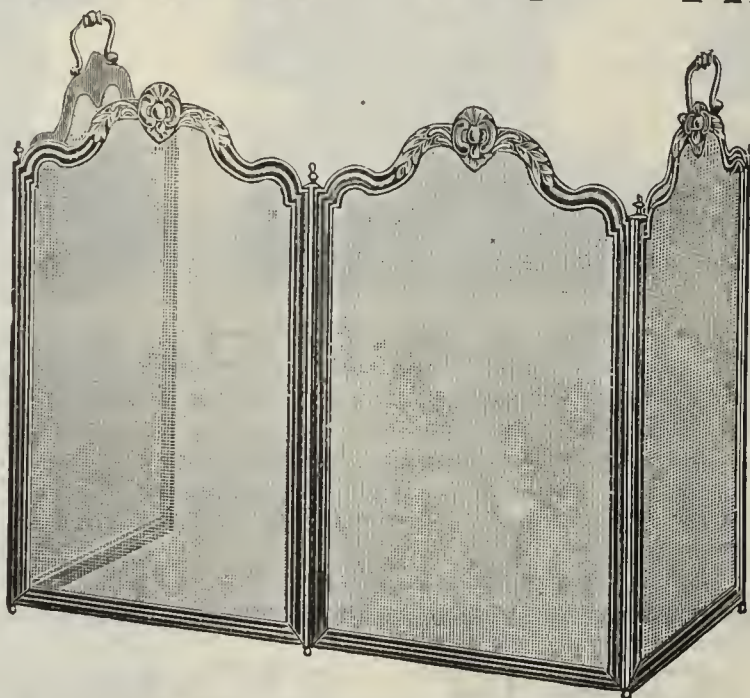
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228 Quarry St., Philadelphia, Pa.

FRENCH FOLDING SCREENS FOR FIRE PLACES

We are the only manufacturers of this line in the United States.

*Send for Our Prices
Before Importing.*

Our screens are heavier, smoother finished, and generally better than the imported article.



Finished in pure brass, gilt, lacquer and Berlin black.

Screens made in the following heights: 18, 20, 26 and 30 inches.

A large variety of styles.

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Fire Place Goods
made of brass, wrought iron and cast iron.

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STOVES, RANGES and
FURNACES.

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MILWAUKEE, WIS.

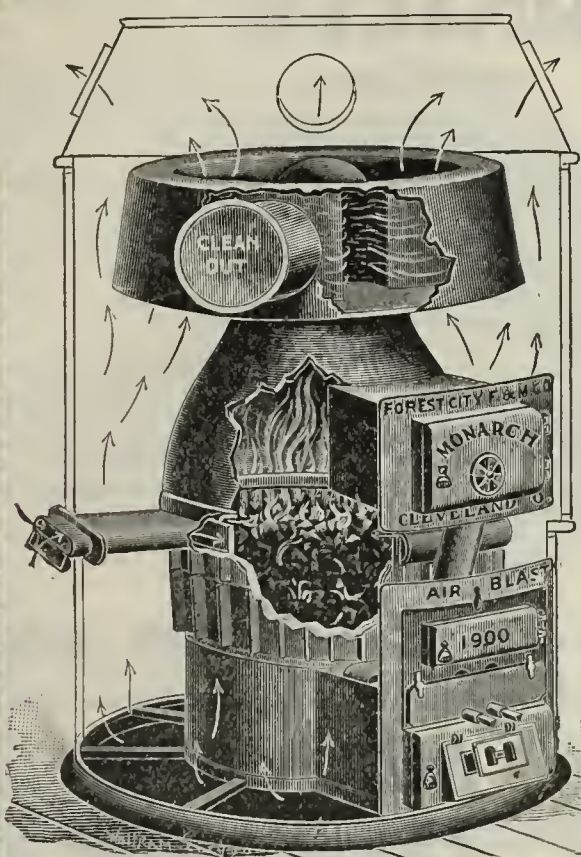


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The price of liberty is eternal vigilance; that of the "WINCHESTER" heater depends on the size. Both are cherished, and in both cases it is worth the price. A valuable agency may be secured by writing Smith & Thayer Company, Boston, Mass.; 105 Beekman Street, New York.

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Monarch Air Blast Furnaces.

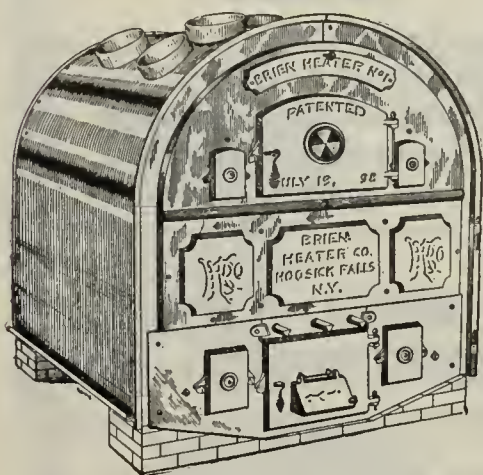
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For Hard and Soft Coal.

Send for 1902
Catalog and discounts.

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Foundry and Mfg. Co.

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Gray Iron Castings to order. High
grade only.



Brien Heater.

A perfect, all cast WOOD or
COAL burner. There is no
other Hot Air Furnace as
low down as the "BRIEN."

Write for territory, catalog and prices.

BRIEN HEATER CO.,
HOOSICK FALLS, N. Y.



Portable OVENS

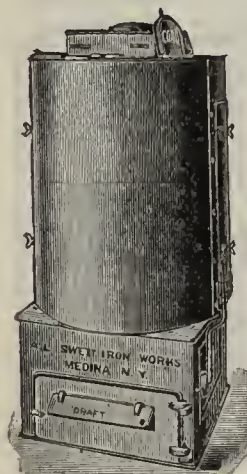
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CORE BAKING,
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OVENS FOR Bakers, Confectioners, Hotels, Etc.

Made in all sizes, single and double, for coal, wood,
natural or artificial gas.

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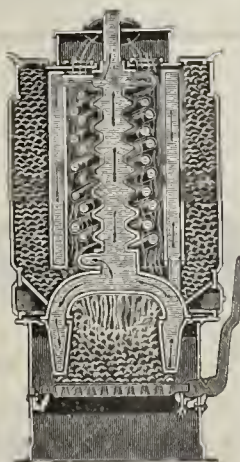
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For heating dwellings and other
buildings; also for greenhouse heating.

SAVES FUEL,
and is a success in every way.

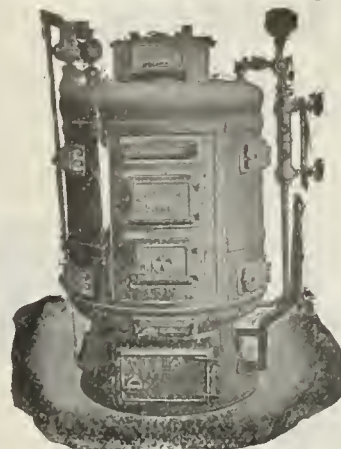
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A. L. Swett Iron Works,
MEDINA, N. Y.



Pierce BOILERS and RADIATORS

for Steam and Water Heating.



Pierce Improved Florida Steam Boiler.
LARGE HEATING CAPACITY.
ECONOMIC IN FUEL CONSUMPTION.

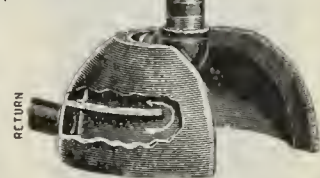
Endorsed by the foremost Architects
and Heating Engineers.
Write for New Illustrated Catalogue.

Pierce, Butler & Pierce Mfg. Co.,
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New York. Boston. Philadelphia.

The Champion Hot Water Combination Heaters.

They Fit Any
Furnace.

Base section when
used without ring
sections



Ring Section



These Heaters are made in five sizes diameter, and
from 100 to 700 square feet radiation capacity.
Will heat those cold rooms or an addition to the build-
ing. Will increase the capacity of any furnace. Are
cheaper than coils and will do more work.
Write for new circular. Manufactured by

FRANK D. STOLZ,
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"PUTTING ON AIRS"

in hot weather, or any other kind of
weather, is all right if you know the
art.

"ABC" Disc Ventilating Fans

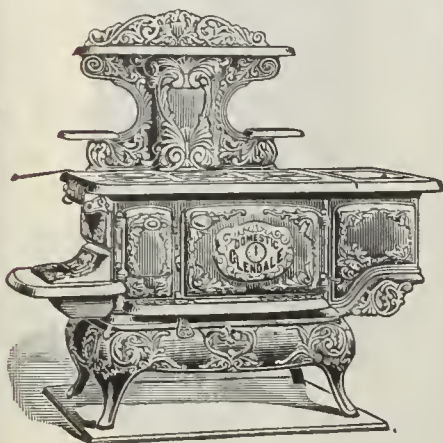
maintain the highest efficiency by
reason of their superior advantage
in construction.

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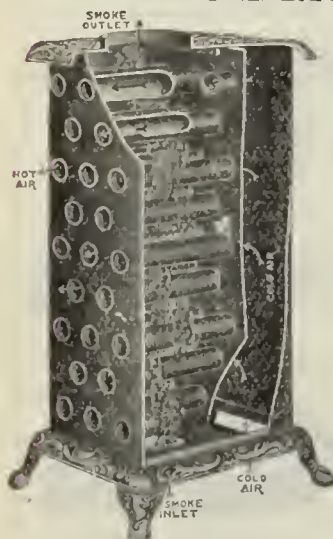
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Stoves and Ranges



Manufactured by
SOMERSET STOVE FOUNDRY CO.,
SOMERSET, MASS.
Send for a Sample.

INDEPENDENT STOVE PIPE RADIATORS.



Don't buy Radiators without learning about the Independent for 1902.

Independent Register Co.,
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BAKER'S Adjustable Thimbles.



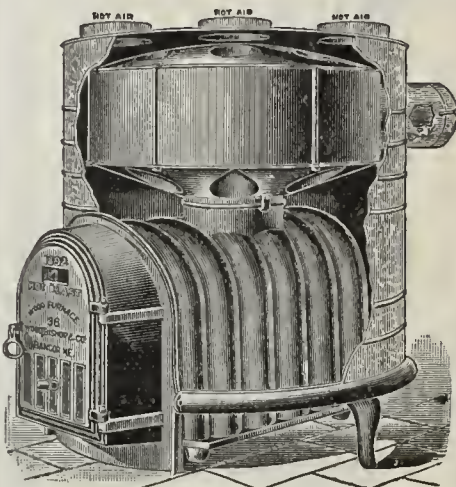
HEADS,
Stamped Steel.
CYLINDERS,
Tin, Double Seamed to Head.
Breakage Impossible.
Indenting of Cylinders Prevented.

Write for Prices.

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RACINE, WIS.

—RESERVING ITS ENERGIES.—“We haven't had much winter weather yet.”
“Never mind; it's waiting for the peach crop to come along.”—*Chicago Record.*

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THE HOT BLAST.

Made With SINGLE PIECE Fire Box Body—

a practically indestructible casting, heavily corrugated to stand the strain.

HAVING IMMENSE AREA OF RADIATING SURFACE—

all directly exposed to the heat of the fire, giving great heating capacity even when fire is low.

MADE IN A WOOD SECTION,

where wood is burned practically—not theoretically.

Our IMPROVED MONITOR,

2 sizes, PORTABLE OR BRICK SET

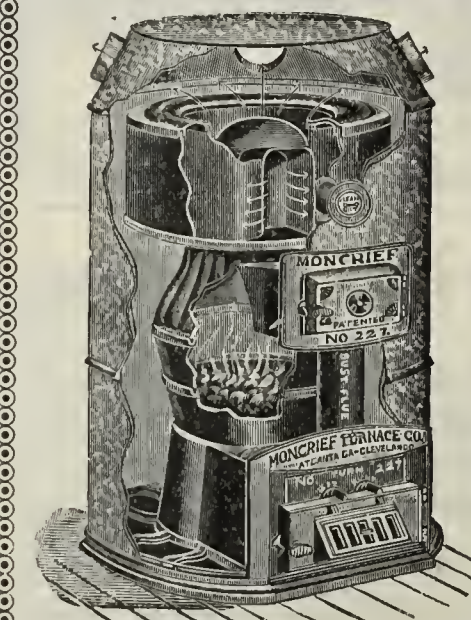
Our Low Priced HOT BLAST,

3 sizes, PORTABLE OR BRICK SET.

Thousands in use in all sections of the country.

Send now for illustrated booklet giving full particulars and testimonials.

Wood & Bishop Co., Established 1839. 329 Main St., Bangor, Maine.



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PORTABLE and BRICK SET.

Unequalled in the Great Essentials---Simplicity, Durability, Economy, Capacity, Comfort,

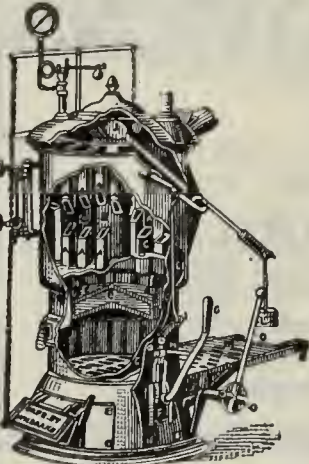
NO BETTER MADE.

Write for catalogue. Special price to the trade.

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The MONCRIEF FURNACE & FOUNDRY COMPANY, ATLANTA, GA.

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TORRID
Fine Coal Burner



For Steam or Hot Water Heating.

This boiler is made on an entirely new principle and is

The Only Boiler

that will burn Pea or Buckwheat Coal successfully.

SAVES TIME. SAVES MONEY. RESULTS UNEQUALED.

MADE BY

W. H. DRAKE

36 Clinton St.,
NEWARK, N.J.

MANUFACTURER OF

The **TORRID** Steam and Hot Water Boilers
for burning either anthracite or bituminous coal.

Factory, Hackettstown, N. J.

Send for catalogue.

SOFT COAL IS CHEAP FUEL

especially if properly burned
in the right kind of a furnace.

CANTON PERFECT BLAST FURNACES

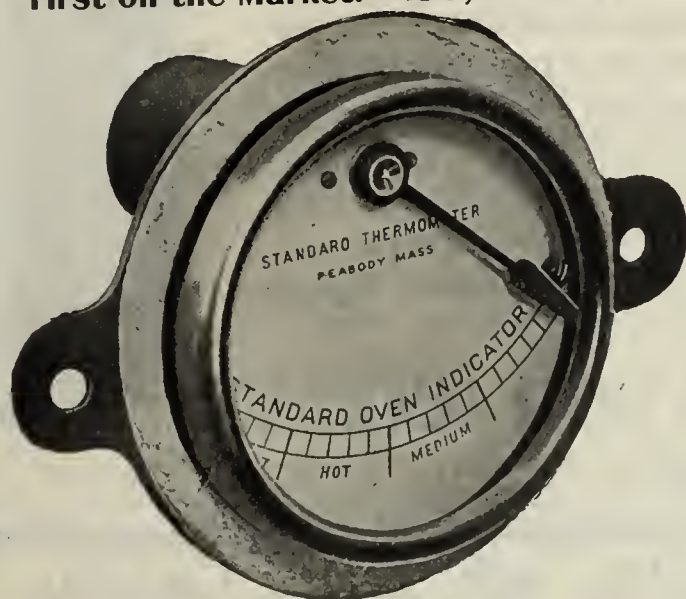
Were BORN and BROUGHT UP in a SOFT COAL DISTRICT.

Write for facts and prices.

THE BONNOT COMPANY, - Canton, O.

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First on the Market. 150,000 Sold.

No. 420, with Projecting Lamina Cover.
3 inches in diameter.**STANDARD
Oven Indicator**

has a dial graduated in the simplest possible manner, as can be seen. This graduation was adopted because every oven has its own peculiarities, and an indicator adjusted to one oven might be incorrect for another. The *Standard* can be adjusted to any oven and has no complicated parts. Made in 3 styles.

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HELIOS-UPTON COMPANY,

HENRY GLEASON, Agent, 258 Broadway, N. Y.

Peabody, Mass., U. S. A.

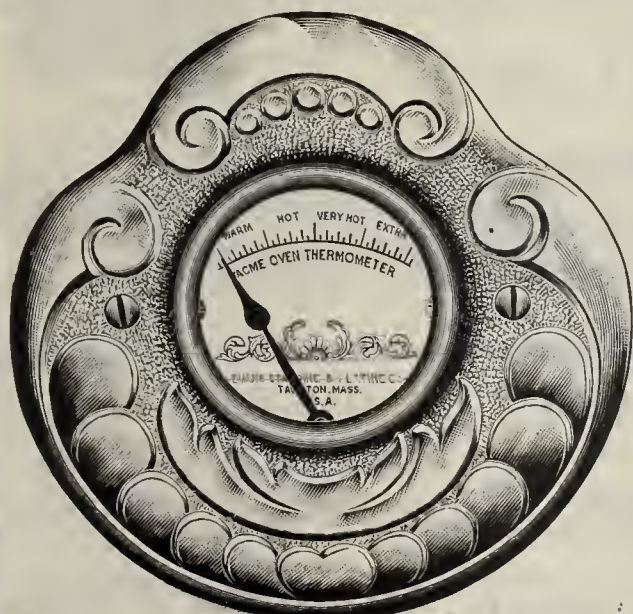
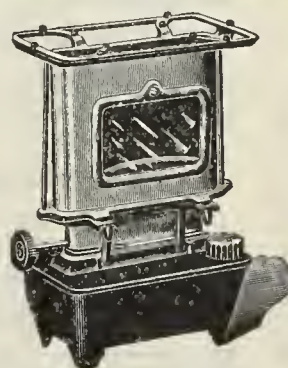
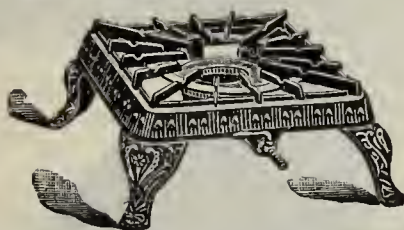
All Kinds of Special Instruments and Appliances Manufactured by Contract.

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Light Gray Iron Castings, Builders' Hardware.

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The Acme Oven Thermometer is made in a first-class manner from start to finish. The case is composed entirely of steel, and is practically indestructible.

They are put up in separate boxes and sealed, making a nice, neat package.

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TAUNTON, MASS.**

C. H. MATTHEWS, Detroit, Mich. (Western Agent).



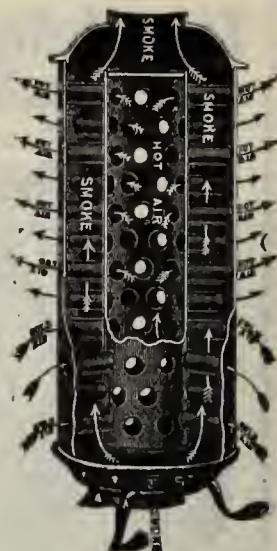
A Tea-Kettle Boils Quicker on my Chimney than on my Stove.

A fire in a red glow represents 1200 degrees of heat, a draft through this carries the heat out of the chimney unless intercepted by a cross tube **Rochester Radiator**, when nearly all this waste heat is conveyed into the room by the rapid circulation of air through the tubes and saved. This appeals to common sense and is verified by the most thorough scientific test.

The **Rochester Radiator** is a satisfactory article to sell and one that affords the dealer a good profit.

ROCHESTER RADIATOR CO.,

100 Furnace St., ROCHESTER, N. Y.



4,866 sq. ins.

SOMETHING
NEW....

Sheet Steel Draft Registers with Screws Complete.

PATENTED DEC. 17, 1901.

Threads are cut and disk is securely fastened
Without cotter pins or washers,
Yet it is loose or tight as wanted.

SEND FOR PRICES.



STOCK SIZES.

2½ in.	4 in.
3 in.	4½ in.
3¼ in.	4½ in.
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Any size made to order in quantities.

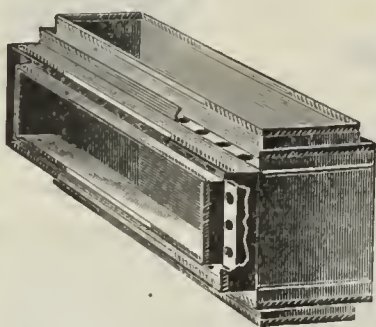
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EXCELSIOR HEATING SPECIALTIES

PIPE



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HOT AIR REGISTERS,
STOVE PIPE ELBOWS,

ARE ALL SELLING AT

MUCH BELOW

their real value.

This is also true of many other things which we make, as our Quotation Sheet will demonstrate.



EXCELSIOR IDEAL ELBOW

ELBOWS

EXCELSIOR STEEL FURNACE CO.
38-40 W. MONROE ST.-CHICAGO.

REGISTERS

REFRIGERATORS,
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LARGEST JOBBERS
in
NEW ENGLAND.

GAS RANGES,
FURNACES, STOVES,
RANGES AND REPAIRS.

HENRY N. CLARK CO., 56 and 58 UNION ST., Boston, Mass.



Semi-Sectional View.

Every Practical Stove Dealer

knows that heat without circulation is valueless. The best circulator gives the best heat.

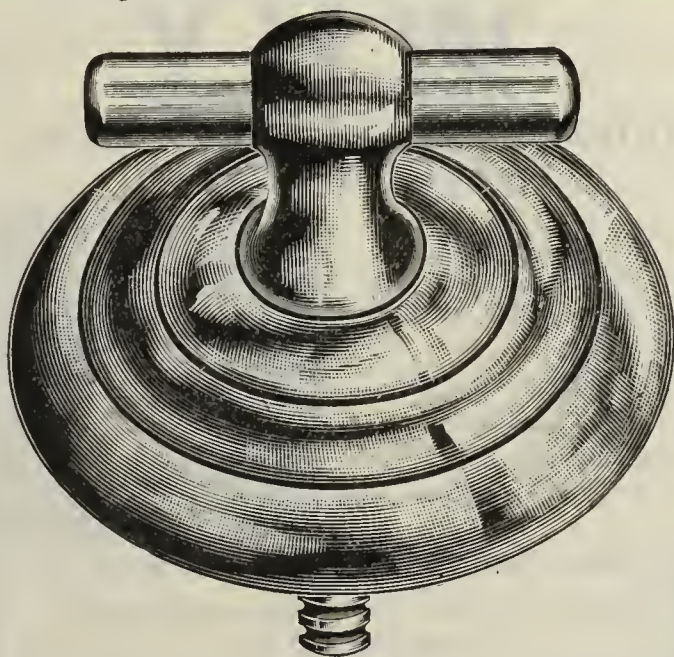
New Era Radiators have *perpendicular* tubes. They take the cool air in at the bottom and rapidly heat it in the natural way *as it ascends*. Their construction tends to *increase* circulation instead of *retard* it, as tubes in any other direction would. All the products of combustion are compelled to touch the outer or inner surface of the tubes and the maximum amount of heat is radiated and circulated throughout the room.

If you would sell the best Radiator, you must buy the best. "*New Eras*" are best in material, best in workmanship, best in appearance, and best in results. Made in three styles and many sizes. Prices are right, affording a large margin. Don't buy something cheap on which you make but little. People are willing to pay a fair price for a good article. Send for our inducements now and be prepared to talk *New Era Radiators* at the right time.

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REGISTER SCREW KEY WITH STAMPED STEEL PLATE

This Key has a Machine Cut Thread and every one guaranteed to be perfect. Plate is $3\frac{1}{4}$ in. in diameter and made of heavy cold rolled steel. Write for prices and samples.



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THE FANNER MANUFACTURING CO., - - Cleveland, Ohio.

H. & C.

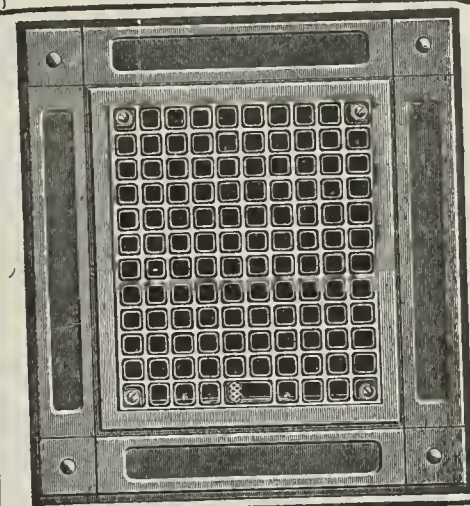
Wrought
Steel

REGISTERS

...and...

VENTILATORS.

**STRONG, LIGHT,
HANDSOME in SIM-
PLICITY of DESIGN.**



**FURNISHED WITH
WROUGHT STEEL
or WROUGHT BRASS
FACE PLATES, AND
IN ALL FINISHES.**

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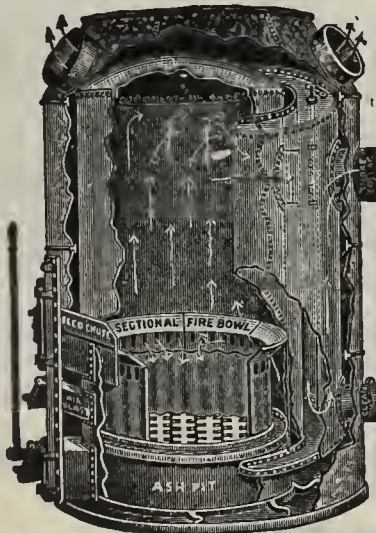
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New Britain, Conn.

GENERAL SALES AGENTS,

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New Britain, Conn.

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The Torrid Zone Furnace



is a trade winner because it has points of merit peculiar to itself that can be found in no other steel furnace. Our new catalogue is now ready to mail and a description of our Hot Air and Hot Water Combination Furnace can be seen in it. We furnish either the cast iron lining or the fire brick at the same price. Our Wood Furnace is called a powerful heater by those who use it.

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Eighth Ave. and Frederick St.,
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Furnace Heating. COAL HODS.

A Practical and Comprehensive Treatise on Warming Buildings with Hot Air, by William G. Snow, with an Appendix on Furnace Fittings. 170 pages; size, 6 x 9 inches. Cloth bound. Price, \$1.50.

This is the only book that has been brought out which presents a systematic and reliable treatment of the warm air furnace system of heating.

It deals with the various types of furnaces, their construction, proper location and setting, together with furnace fittings, and all matters pertaining to the installation of furnaces and to effective and economical heating by warm air. The subject is discussed for the first time by a competent author possessed of a scientific education and a practical training, who presents positive rules, based on a long experience, for guidance in designing furnace systems for dwellings and other buildings where this popular method is employed. The various details of furnace work are described simply and at such length that the volume will be valuable to all who are in any way interested in the subject. It is recommended to practical furnacemen, to architects, builders and house owners, and to tinnery and plumbers in suburban sections who do furnace work. To all these it will prove a reliable text-book and guide.

PARTIAL SUMMARY OF CONTENTS BY CHAPTERS.

Chapter I.—Furnaces—Is devoted to Furnace Construction—The Relative Proportion of Furnace Parts—Secondary Heating Surface—Economy and Efficiency—Heating Capacity and Exposed Wall Surface—Manufacturers' Ratings of Their Own Productions, etc.

Chapter II.—House Heating—Compares Furnaces and other apparatus, and describes Method of Setting Brick and Portable Furnaces—Location and Area of Cold Air Supply—Cold Air Rooms and Air Filters—Return Ducts and Air Circulation—Size of Hot Air Pipes—Location of Registers, etc.

Chapter III.—The Combination System—Discusses Heating Distant Rooms with Radiators—Balancing the System—Location of Water Heater in Furnace—Capacity of Water Heaters—Size of Radiators, etc.

Chapter IV.—Air—Deals with the Necessity of Ventilation—Water Needed to Moisten Air—Expansion of Air—Velocity of Air in Tubes, etc.

Chapter V.—Heating and Ventilation of Buildings—Considers the Size of Furnaces Required—Fresh Air Room and Supply—Air Circulation—Size of Flues—Use of Stack Heaters—Size of Heating coils in Vent Flues, etc.

Chapter VI.—Heating of Public Buildings, Churches and Stores—Is given to the Size of Furnaces Required—Grate Surface in Ventilated Buildings—Air Supply—Size of Heating and Ventilating Flues—Size of Stack Heater, etc.

Chapter VII.—Fan-Furnace Combination System—Is devoted to Positive Warm Currents from Fan Systems—Location of Fan and Driving Apparatus—How Good Furnaces are Aided by Fans—Types and Efficiency of Fans—Area of Ducts and Flues, etc.

Chapter VIII.—Temperature Control.

Chapter IX.—Estimate and Contract Blanks.

Chapter X.—Value of Fuels. The Proper Size for Furnace Chimneys—with tables.

APPENDIX.

Furnace Fittings.—A section of 45 pages dealing with the Making of Furnace Casings—Metal Cold Air Boxes—Making Furnace Bonnets and Collars—Making Pipe and Elbows—Register Boxes and Stack Shoes, etc.

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DAVID WILLIAMS COMPANY,
PUBLISHERS,

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At anywhere near equal prices, our difficulty has always been to supply the demand for our Coal Hods. This season there will be no delay, no waiting, no disappointment. Every order will be filled promptly. If coal hod quality counts with you, send us your order.

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Buffalo, New York City, Chicago, Kansas City, St. Louis,
Denver, Seattle, San Francisco.

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THE TRIUMPH ADJUSTABLE STOVE PIPES TAKE THE LEAD:

They are easy to put together.

They are easy to take down.

They can be nested for storage.

They save freight.

They need no wiring.

They cannot telescope.

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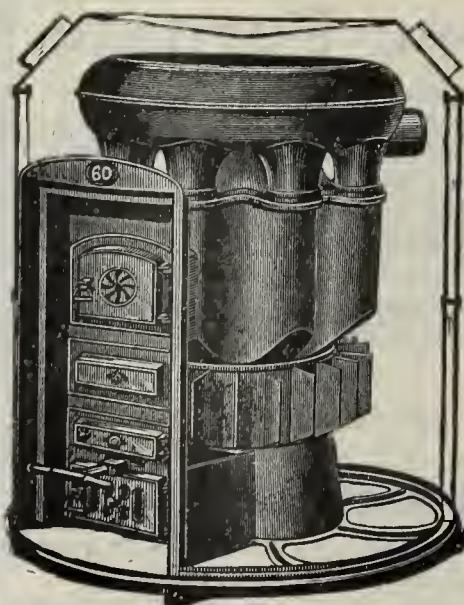
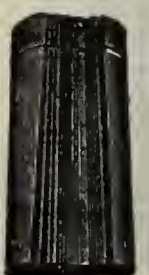


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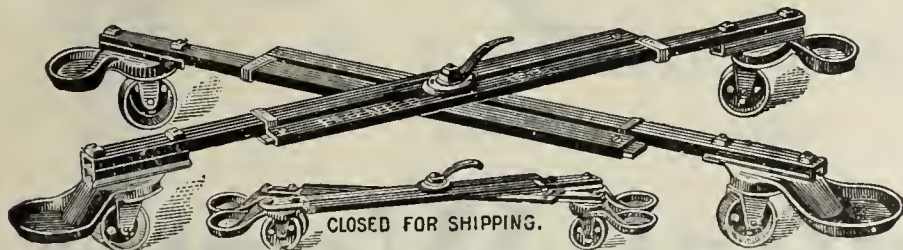
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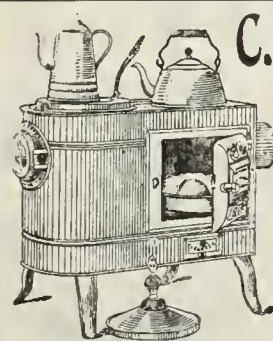
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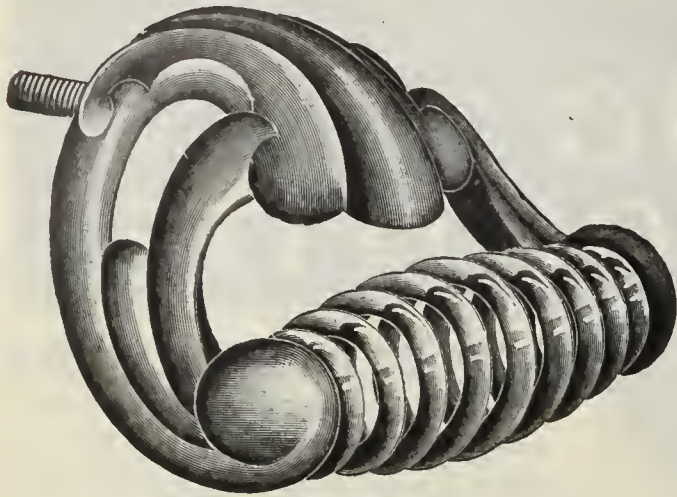
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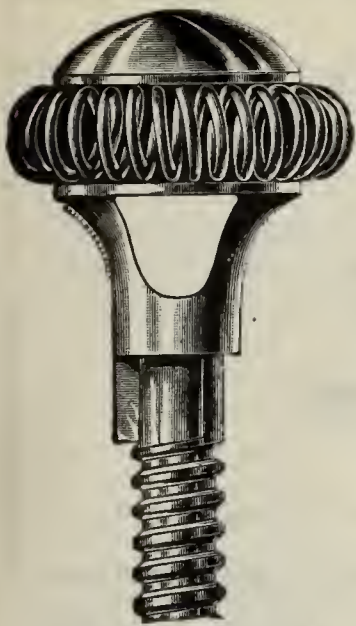


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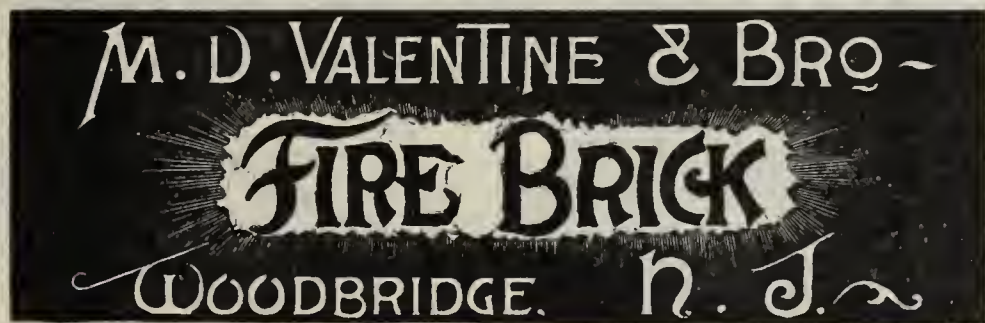
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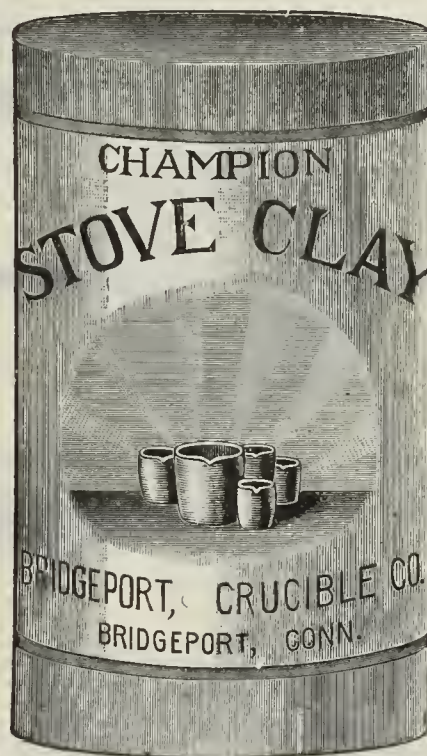
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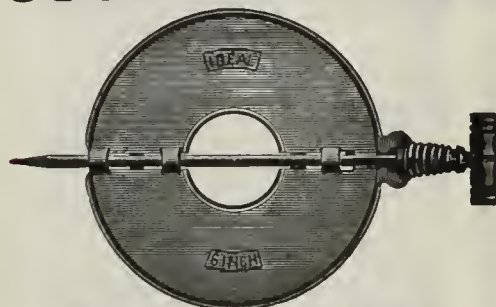
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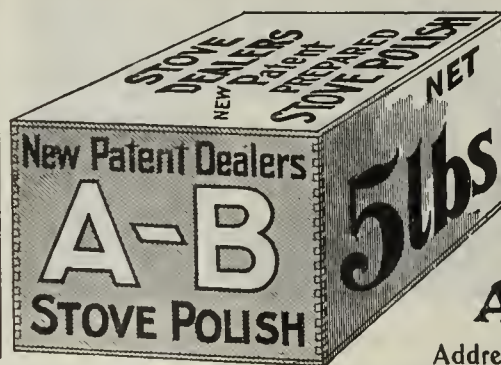
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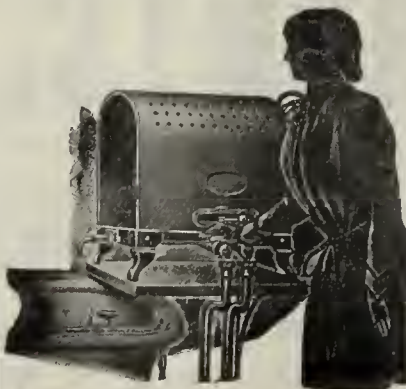
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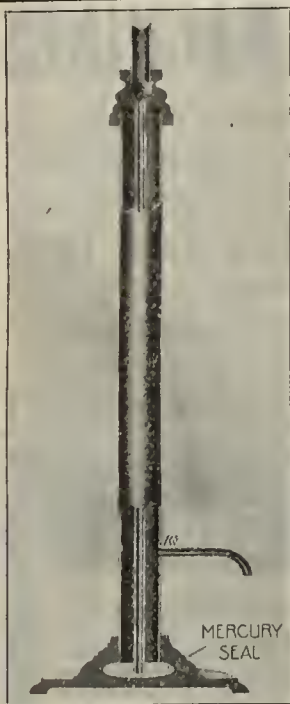


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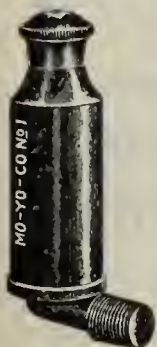
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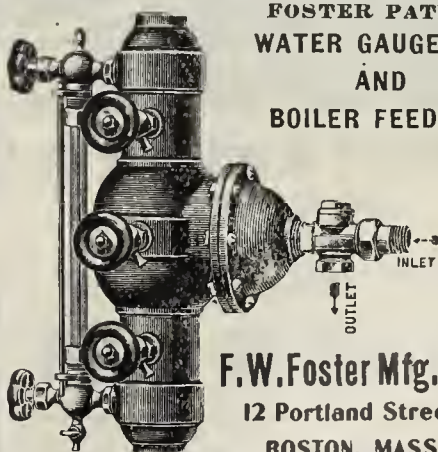


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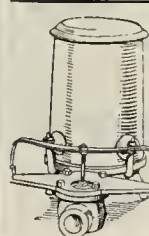
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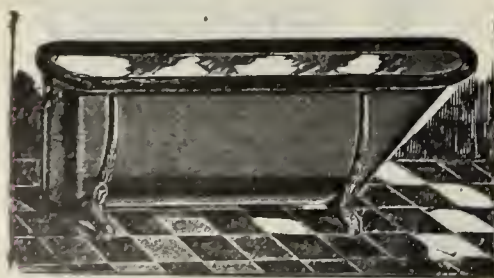
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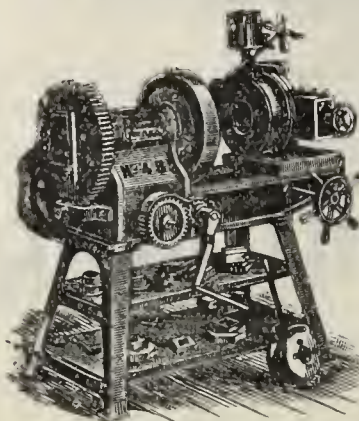
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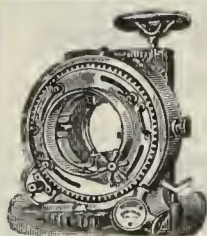
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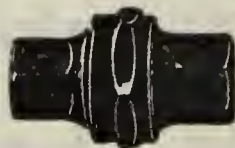
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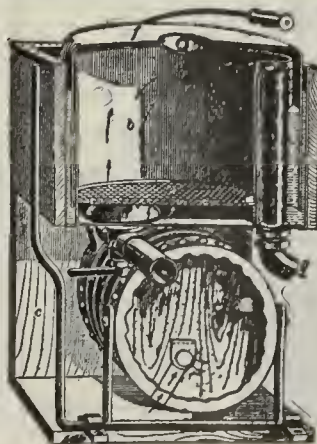
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Domestic boilers warmed by steam.

VALUE OF HEATING-SURFACES.

Computing the amount of radiator-surface for warming buildings by hot water.
Calculating the radiating-surface for heating buildings—the saving of double-glazed windows.
Amount of heating-surface required in hot-water apparatus boilers and in steam-apparatus boilers.
Calculating the amount of radiating-surface for a given room.
How much heating-surface will a steam-pipe of given size supply?
Coils vs. radiators and size of boiler to heat a given building.

Calculating the amount of heating-surface.
Computing the cost of steam for warming.

RADIATORS AND HEATERS.

Improper position of radiator-valves.
Hot-water radiator for private houses.
Remedying air-binding of box-coils.
How to use a stove as a hot water heater.
"Plane" vs. "Plain" as a term as applied to outside surface of radiators.
Relative value of pipe on cast-iron heating surface.
Relative value of pipe on steam-coils.
Warming churches (plan of placing a coil in each pew).
Warming churches.

PIPE AND FITTING.

Steam-heating work—good and indifferent.
Piping adjacent buildings: pumps vs. steam-traps.
True diameters and weights of standard pipes.
Expansion of pipes of various metals.
Expansion of steam-pipes.
Advantages claimed for overhead piping.
Position of valves on steam-riser connection.
Cause of noise in steam-pipes.
One-pipe system of steam-heating.
Air-binding in return steam-pipes.

How to heat several adjacent buildings with a single apparatus.
Air-binding in return steam-pipes, and methods to overcome it.

VENTILATION.

Size of registers to heat certain rooms.
Determining the size of hot-air flues.
Window ventilation.
Removing vapor from dye-house.
Calculating sizes of flues and registers.
On methods of removing air from between ceiling and roof of a church.

STEAM.

Economy of using exhaust steam for heating.
Heat of steam for different conditions.
Superheating steam by the use of coils.
Effect of using a small pipe for exhaust steam-heating.
Explosion of a steam-table.

CUTTING NIPPLES AND BENDING PIPES.

RAISING WATER AUTOMATICALLY.

MOISTURE ON WALLS, ETC.

MISCELLANEOUS.

Heating water in large tanks.
Heating water for large institutions and high city buildings.

Questions relating to water-tanks.
On heating several buildings from one source.
Coal-tar coating for water-pipe.
Filters for feeding house boilers.
Other means of clarifying water.
Testing gas-pipes for leaks, and making pipe-joints.
Differential rams for testing fittings and valves.
Percentage of ashes in coal.
Automatic pump-governor.
Cast-iron safe for steam-radiators.
Preventing fall of spray from steam-exhaust pipes.
Heating and ventilation of a prison.
Amount of heat due to condensation of water.
Expansion-joints.
Resetting of house-heating boilers—a possible saving of fuel.
How to find the water-line of boilers and position of try-cocks.

MISCELLANEOUS QUESTIONS.

Applying traps to gravity steam-apparatus.
Connecting steam and return risers at their tops.
Power used in running hydraulic elevators.
On melting snow in the streets by steam.
Arrangement of steam-coils for heating oil-stills.
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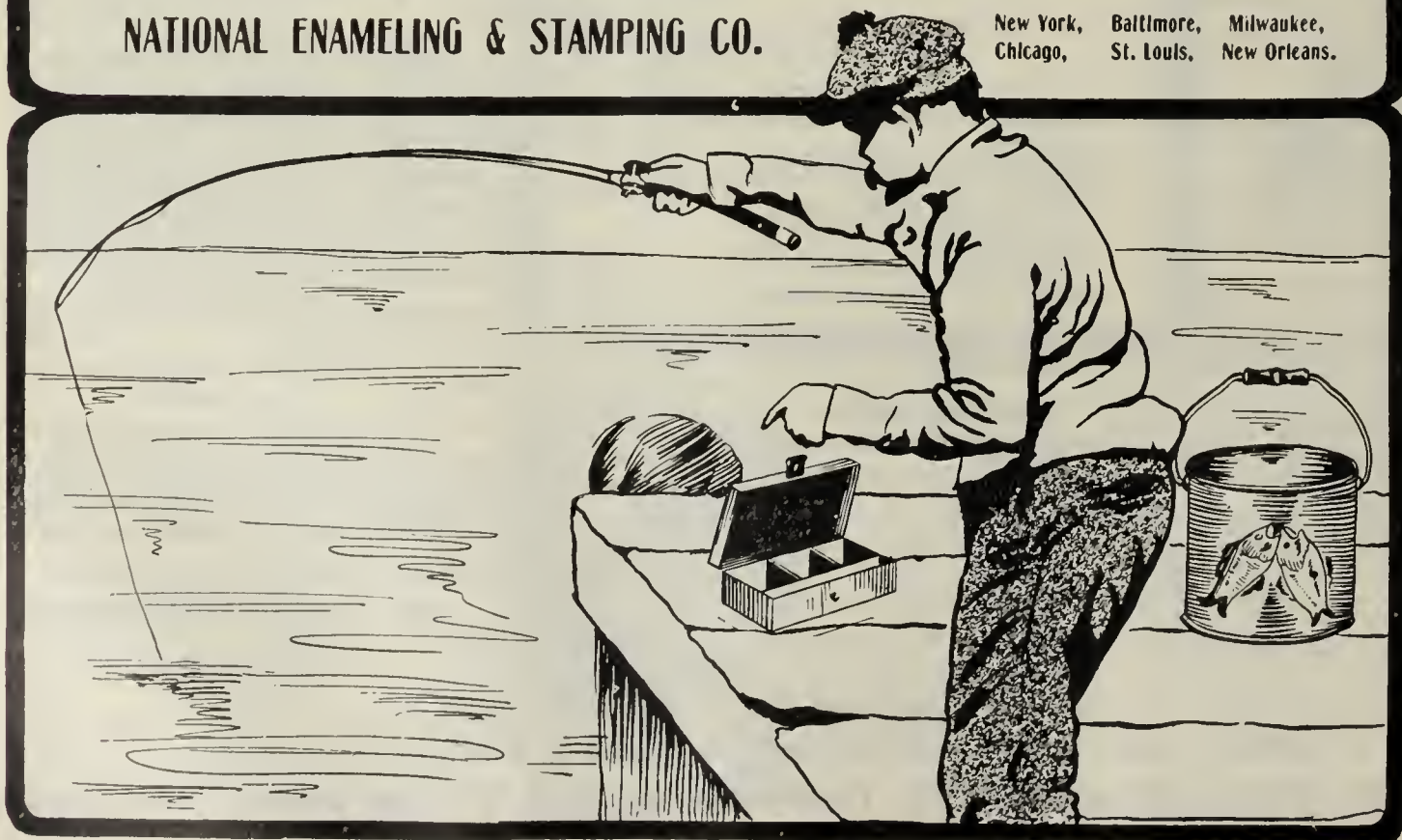
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NEW YORK AND CHICAGO.

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Volume LVIII.....No. 6
Index to Reading Matter.....Page 63

Stoves and Fuel.

Now that the strike of the anthracite coal miners has lasted three months, the stove trade begin to feel that its continuance may have a disagreeable effect on the business of the year, which at the outset gave promise of a large volume of trade and better prices. The conditions governing prices continue to warrant the advances which have been quite generally made, while the employment of labor in all branches at good wages enables those who desire them to secure better home conveniences. Notwithstanding these conditions, however, reports from the districts in which hard coal is used indicate that the local dealers fear the scarcity and high prices of anthracite will make it necessary for them to reduce the size of the orders already placed for both heating and cooking stoves. The difficulty of securing a supply of hard coal for the kitchen range has already been thoroughly discussed by the housekeeper and the coal merchants. Therefore there is little opportunity for argument by the stove dealers throughout the hard coal country in the interest of the heating and cooking stoves they are displaying. Although there is little encouragement for their coal stove trade the dealers are seeking to secure business in other lines. They are now making inquiries about gas and oil heaters, and evidently anticipate securing some trade in this class of goods. That their interest in these goods is timely is proved by the inquiries made by their customers about the samples which they are now displaying.

The fuel question is one that has received a good deal of consideration in different sections of the United States during the year. California and Texas are enthusiastic over the development of oil within their limits. This gives them a fuel at home, without long hauls and expensive freight, and they have been quick to devise apparatus for use in the fire chambers of all kinds of furnaces in which other fuels were used heretofore. The strike among the anthracite miners has led to the use of soft coal in the East to a large extent in all kinds of factories and buildings, with a distribution of soot as a by no means agreeable result. The probability of securing a supply of hard coal for heating residences is already being questioned, whether for use in hot air furnaces, steam or hot water boilers or the high grade and less pretentious parlor heaters which have been an important factor in the occupation of the foundries. Already inquiry is being made of the manufacturers by the local dealers as to whether or not certain stoves, furnaces and boilers can be used for burning soft coal if neces-

sary, and if not, what equipment can be provided to adapt them for that fuel. There can be no doubt that soft coal will be burned during the year in many residences which have heretofore been heated by hard coal, and the dealer will have frequent occasion to remove soot from the flues of the heating apparatus and also to clean the chimneys.

Inquiries have also been made for fuel oil burners for stoves, furnaces and boilers. These inquiries are not only sent to manufacturers of coal goods, but also to those who have made a specialty of oil cooking and heating apparatus, the opinion evidently being that the oil stove manufacturers, having solved the problem of making burners for the smaller apparatus, can readily devise burners that can be used with economy with the larger apparatus. Unfortunately, even in the Eastern oil fields, burners suitable for cooking and heating with oil fuel have not been developed to such an extent as to be thoroughly satisfactory. The burners that are suitable for boilers in charge of an engineer are hardly adapted to household use. While a number of fuel oil burners that have been put on the market at various times have been used in houses, apparently none of them have continued long in popular demand. Numerous little details need to be perfected in the construction of a fuel oil burner designed for household use before such a device can be made generally acceptable and the liquid fuel become widely available for domestic purposes.

Agricultural Prosperity.

The Iron Age has gathered reports on the condition of business from all sections of the United States—East, West, North and South—which give a very comprehensive idea of the business condition of the country at the present time. These reports come from 45 States and Territories and fill 36 closely printed columns. The testimony presented by conservative and intelligent business men in all sections indicates, with almost practical unanimity, that the country's crops this season are excellent and that the agriculturalists are exceedingly prosperous. For a long series of years "prosperity," whenever it came, applied more particularly to the industrial part of the community—that is, to the mechanic, the factory and mill worker, the railroad employee, &c. The poor farmer seemed to get a discouragingly small proportion of the good things. But now, with largely enhanced prices for his products, he appears to thoroughly appreciate his good fortune and is making a proper disposition of the proceeds in the way of freeing his farm from the burden of debt and making improvements which operate to the benefit of neighboring merchants and artisans.

The Need of Trade Schools.

It is remarkable how little attention is being paid by the public press to the subject of trade schools. Notwithstanding that the need for the extension of these institutions throughout the country is conceded by all those who have studied the matter to any extent, the movement seems to evoke little or no enthusiasm on the

part of the public. Meanwhile vast numbers of boys who if provided with facilities for obtaining a proper trade education could be furnished with the means for earning a good livelihood and becoming useful citizens of the republic, are growing up and going out into the world without any adequate industrial equipment. A refreshing exception to the general indifference in regard to this matter is noted in the strong plea for more trade schools recently presented in the New York *Evening Post* by Joshua C. Pumpelly. The writer points out that we have in this country a certain number of manual training schools where children are taught, in general, to use their hands and eyes; but of trade schools, pure and simple, where boys may learn a handicraft by which they can earn an honest living, there are lamentably few. The New York Trade School, founded by the late Colonel Auchmuty, is an example of what is needed in this line, and the New York Hebrews, with the aid of the De Hirsch Fund, have established a somewhat similar work for the Jewish boys. Then there are a few comparatively small trade schools in Boston, Hartford and one or two other Eastern cities, while the Board of Education of Springfield, Mass., has recently achieved the unique distinction of establishing a public trade school. This is about all that is being done at present in this important field. The American boy who is ambitious to learn a trade is to-day obliged to pick up a rudimentary knowledge of his chosen handicraft as an apprentice or helper, struggling all the while against the influence of the unions, whose general policy is to oppose, by every means in their power, the training of future rivals to the selfish union members, and against the disinclination of the workmen themselves to impart to others the knowledge they possess. The result of this discrimination against the American boy, which is very general among workmen, is that vast numbers of youths, many of them of more than average capacity, unable to gain even the precarious foothold of apprenticeship in any trade, are forced to seek a living by their wits, taking up whatever presents itself and drifting, in too many cases, into a life of shiftlessness, if not of dishonesty.

A Good Investment.

In the sharp industrial competition which is one of the characteristics of the age, an immense advantage has been derived by European manufacturers from the trade and technical schools which have been established on the Continent. Germany affords a striking illustration of this fact. Since the inauguration of the trade school system in that empire, but a comparatively few years ago, German manufactured articles, which were formerly almost unknown outside of the Fatherland, have penetrated into all the world's markets. And the same thing holds good, in a lesser degree, of France, Switzerland and Belgium, in all of which countries trade schools are an established institution. Great Britain, too, is awakening to the need of trade schools and the movement has received a great impetus in that country in the past few years. America, almost alone of the civilized and progressive nations of the world, lags behind in this important economic movement. And the only valid excuse for this state of things is that the trades unions are opposed to them. But surely the general prosperity of the country, the well being of the community and the future of the rising generation should weigh against the selfishness of a limited number of union workmen. Trade schools are among the best investments any country can make. Not only do they produce useful citizens, capable of supporting themselves and their families, but they develop, by the

superiority of workmanship which they inculcate, markets for the manufactures of the country and promote an industrial excellence which tends to the prosperity and well being of the whole nation.

Our Foreign Trade in Iron and Steel.

An increase of \$10,000,000 in the imports of iron and steel manufactures and a decrease of \$19,000,000 in the exports of that class of manufactured products is the most striking feature of the foreign commerce of the United States in the fiscal year ended June 30, 1902. The total imports of manufactured iron and steel in that period amounted in value to \$27,180,255, against \$17,874,789 in the preceding year, while the exports of iron and steel manufactures were \$98,552,562, against \$117,319,320 in the preceding year. This makes the imports of the year in this class of materials larger than those of any preceding year since 1893. For many years prior to 1901 the exports of iron and steel had steadily increased, while the imports as steadily decreased. Exportation of iron and steel manufactures increased from \$12,000,000 in value in 1880 to \$121,000,000 in 1900, while imports decreased from \$67,000,000 in 1882 to \$12,000,000 in 1899. The increase in the imports of iron and steel last year was general, practically every class showing much larger figures in 1902 than in 1901. Tin plate, for example, shows an increase of over \$2,000,000, and pig iron, ingots, blooms and bars each over \$1,000,000, with other classes in about the same proportion. The cause of the reduction in exports of iron and steel is twofold; primarily from the fact that the home demand for iron and steel products was so heavy last year that there was practically little or no surplus left to send out of the country, while, secondly, the low price ruling in foreign markets last year deterred American manufacturers from making any particular effort to market their goods abroad.

Assets of the United States Steel Corporation.

For the first time since the organization of the United States Steel Corporation a detailed statement of the assets of the properties has been furnished. This statement was called forth by a suit brought by a stockholder, who asked for an injunction to prevent the company from carrying out their bond conversion plan.

The assets, it is stated, include 400 producing mills of the value of \$300,000,000; 75 blast furnaces of the value of \$48,000,000; iron and Bessemer ore properties of the value of \$700,000,000; coal and coke properties of the value of \$100,000,000; natural gas fields of the value of \$20,000,000; cash in bank to the amount of \$66,000,000, and over \$80,000,000 of material in the process of manufacture. The total value of the company's property, including cash and cash assets, is placed at \$1,409,291,000 by Mr. Schwab in an affidavit which is part of the corporation's reply. The company's earnings are stated to be at the rate of more than \$140,000,000 a year. A saving of \$40,000,000 a year is credited to the ore properties, and it is estimated that the ownership of transportation facilities saves the company \$10,000,000 annually. The earnings of the coal and coke properties are stated to be more than \$1,000,000 a month.

These statements as to values and earnings were presented by President Charles M. Schwab to disprove a charge that a false certificate was presented by the company's officials when they certified that the properties were worth at least the par value of the preferred stock after deducting all indebtedness.

The Fort Pitt Natural Gas Company and the Manufacturers' Light & Heat Company have advanced the prices of natural gas from 22½ to 25 cents per 100 cubic feet, net, in the Pittsburgh district, thus equaling the rates charged in that city.

HOW TO HANDLE RANGE PEDDLERS.

We are in receipt of a letter from a stove dealer in a Western city who gives his experience in meeting the competition of steel range peddlers, which will undoubtedly be read with interest by many who find their trade injured in the same manner. He says:

"Ours is an agricultural community, our city depending almost exclusively on the patronage of farmers. Just now we are having a phenomenal trade in steel ranges. Some range peddlers operated here for several weeks and got a great many people interested. We then instituted a thorough and heavy campaign of advertising against them, putting a wagon out ourselves and selling a range which is only handled through dealers. The result was that we drove the peddlers out of this vicinity after making them pay over \$40 taxes to our county and city. The best part of our experience is that we sold over 30 of our ranges in as many days, with the immediate prospect of selling as many or more in the next 30 days. We have learned that the most successful way to sell high-class ranges is to send a wagon load with a salesman out into the country so as to get the undivided attention of the farmer's wife. She only gets to town occasionally and then seldom visits a stove store except on the most urgent necessity. Her time in town is spent in dry goods or grocery stores, but when we get her attention and succeed in interesting her at her own home, if she needs a range or cook stove we make the sale. We sell at strictly one price to every one, a price that gives us a handsome margin, and yet it is \$10 to \$12 less than the price at which the peddlers sell their ranges."

Stove dealers in general should learn a lesson from our correspondent's experience. He has profited by adopting part of the methods of the enemy. This is in line with the suggestions editorially made in these columns some weeks since. The way to sell more stoves is by endeavoring to reach the people directly and not by waiting for them to drop into the store.

THE SUMMER STOVE TRADE.

As usual, the weather has exerted some influence on the summer stove trade, the difference this year being that it has been so cool that the demand for oil cooking apparatus has by no means come up to the expectations of the smaller dealers. Unless the balance of the season develops more buying than has been experienced hitherto, a considerable stock of these goods will be carried over. Already the failure of dealers to dispose of their stock is reflected in collections, which are said to be slower than in previous years. This is disappointing, as the early indications were that the season would be a good one. All classes were occupied at good wages, and it was expected that the buying of household conveniences this year would be generous. Unfortunately, however, the cool weather has had a bad effect on the sale of all kinds of summer goods. The manufacturers of oil heating stoves report that buyers are showing a lively interest in this class of goods, particularly in sections where hard coal is the customary fuel. The early orders for oil heaters have been gone over by the buyers, and the tendency is growing to increase the orders, sometimes doubling them up.

Michigan Stove Company's Entertainment.

The Michigan Stove Company entertained about 250 persons on the occasion of the unveiling of the bronze tablet on their grounds at Detroit, July 31, to which allusion was made in our last issue. The gathering was composed of the best citizens of Detroit and included some of the early settlers. After the ceremonies they were invited into the company's main building, sample room and offices, where a collation was served, which added to the pleasure of the day.

The tablet now stands facing a thoroughfare over which thousands of persons travel daily, as it is not only one of the main streets of the city but it also leads to very popular summer resorts—namely, Belle Isle

Park, the Water Works Park, the Boulevard, &c. Those who pass are attracted by the tablet and thus are impressed with the fact that the spot so marked is historic ground. George H. Barbour, vice-president and general manager of the company, who had active charge of the arrangements, expresses himself as more than satisfied with the results.

The Iron Molders' Union of North America.

The international convention of the Iron Molders' Union of North America concluded its business in Toronto, Canada, on July 22, after selecting Philadelphia as the place of meeting in 1905. The election of officers resulted as follows:

President, Martin Fox, Covington, Ky.
First Vice-President, Joseph F. Valentine, San Francisco, Cal.
Second Vice-President, M. Keough, Troy, N. Y.
Third Vice-President, J. Fry, Worcester, Mass.
Fourth Vice-President, John Campbell, Quincy, Ill.
Secretary, E. J. Denney, Cincinnati, Ohio.
Assistant Secretary, John G. Weaver, Covington, Ky.
Financier, R. H. Metcalf, Cincinnati, Ohio.
Treasurer, Alexander Faulkner, Cleveland, Ohio.
Editor Iron Molders' Journal, David Black, Cincinnati, Ohio.

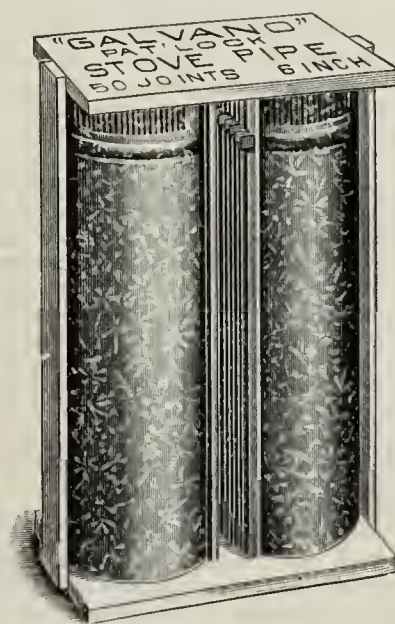
The following were elected to the Executive Board: John Bradley, Poughkeepsie, N. Y.; P. Murphy, Richmond, Va.; James H. O'Neil, Providence, R. I.; George Digel, Memphis, Tenn.; A. R. Mitchell, Montreal; John Loder, Pittsburgh, and L. O'Keefe, Detroit, Mich.

The members of this board spent their whole time traveling in the interests of the union, reporting from time to time to the head officers at Cincinnati, Ohio.

Five hundred and twenty delegates attended the convention.

The Galvano Patent Lock Stove Pipe.

Hemp & Co., St. Louis, Mo., are now manufacturing a new line which they term the Galvano patent lock stove pipe. This pipe is made of the best grade of gal-



The Galvano Patent Lock Stove Pipe.

vanized iron, is swedged and crimped, has a double lock seam and can be easily put together by any one, without the use of hammer or rivets, by simply pressing or bending in the notch, which securely fastens the pipe. It is practical for all purposes, but is especially adapted for the use of lumber mills, factories, plantations, railroads, &c., and is recommended for damp climates, where other material would readily rust. The pipe is packed in 25 and 50 joint lots, in crates similar to that shown in the illustration. It is made in 5, 5½, 6 and 7 inch diameters. The company are prepared to furnish for use with this pipe any size tapers or reducing joints, also galvanized four-pieced or corrugated elbows.

CONDITIONS IN THE STOVE MOLDING INDUSTRY.

The address of President Martin Fox at the meeting of the representatives of the Iron Molders' Union at Toronto, Canada, on July 7, contains much that is of interest to the stove trade, and we present below some extracts from it. After dealing with the developments of the industry and the trying position of the national officers and expressing himself in favor of yearly agreements, Mr. Fox stated that the molders now enjoy the best wages and conditions they have experienced for 25 years. His special references to the stove molding branch were as follows:

Under our conference arrangements with the Stove Founders' National Defense Association the advance of 10 per cent. on 1898 prices has been supplemented by a further advance of 5 per cent. in 1900 and 5 per cent. additional on April 1 of the present year. Thus the stove plate branch of the trade has sustained a flat advance of 20 per cent., which, with the numerous readjustments of low paid work that have been made possible by buoyant trade conditions, represents a very substantial increase in the earning power of our members who follow this branch of the trade.

AGREEMENTS OF VALUE TO BOTH SIDES.

Our observations and experiences during the past term, when wage advances were so prominent a feature of our work, confirm me in the belief that wage agreements covering a specified period are desirable. They insure a period of peace for the prosecution of the no less important work of the union, and introduce an element of certainty into the industry which is of positive value to both the molder and his employer. It is my earnest hope that this view will meet with favor in this convention.

PERMANENT RESULTS OF MORE VALUE THAN TEMPORARY GAINS.

It is quite true that although the improvement in the wages and conditions of our members have been most marked during the past term, some have protested with emphasis at times that we were not moving forward fast enough. That thought has sometimes thrown our members in some localities and the national officers into seeming antagonism. As a general rule, sounder judgment has prevailed and harmony has been restored; but still we are aware that there is an impatient element among our membership who are loud and insistent in their denunciation of the national officers as bars to their progress, and another, though inconsiderable portion, who carry their traduction to the point of charging partiality to the interests of the employers. How absurd, illogical, not to say uncharitable, such an attitude is, must be apparent to any one who will give the subject a moment's thought. The truth of the matter is that those impatient ones have not yet realized that no movement can advance too rapidly without inviting disaster. My every effort, my every energy has been devoted to promoting orderly and substantial progress and establishing conditions that might endure, rather than to furthering a policy which, succeeding for a moment, is followed by a reaction that loses for us a portion of what we originally held. The policy of an organization of the standing and experience of the Iron Molders' Union of North America should be to build a substantial structure and not a castle of cards.

SHORTENING THE WORKING HOURS OF THE DAY.

At the time of the Indianapolis convention it was ordered that a vote of the membership be secured on the proposition to establish an eight-hour day. The vote resulted 12,367 in favor and but 796 against. That result was conclusive enough, but the problem of how to put it into practical effect, it will be admitted, was a serious one. At the meeting with the representatives of the Stove Founders' National Defense Association, which took place a month after the result of the vote was known, the question of an eight-hour day in the stove foundries was brought up for discussion and, as anticipated, met with very pronounced opposition from the manufacturers, and nothing of a substantial nature was accomplished.

ADVISED AGAINST SYMPATHETIC STRIKES.

In May, 1900, the National Metal Trades' Association and the International Association of Machinists entered into an agreement, which, among other things, provided for the inaugurating of a nine-hour work day in the shops of the members of the association on May 20, 1901. From the dissatisfaction expressed with certain features of this agreement and misunderstandings as to its meaning which subsequently developed, I antici-

pated that the nine-hour day would not be inaugurated in the machine shops without serious trouble, and in every instance where our locals asked for advice upon the proposition of taking part sympathetically in the machinists' movement, I strongly advised against it. With the exception of our locals in San Francisco and several points in the Northwest the advice was heeded, and the final result proved its wisdom.

Although it might be thought this was an inopportune time to agitate a shorter work day in the foundry, we nevertheless tested the sentiment in the Central West and found that, with the exception of St. Louis and one or two smaller places, there was a preference for a further wage advance.

THE APPRENTICE RATIO.

Following the conference held with the representatives of the Stove Founders' National Defense Association in the spring of 1901 a very interesting discussion took place upon the ratio of apprentices to journeymen. A vote was finally taken upon a proposition to establish a one to five ratio, and upon another to establish an intermediate ratio between one to five and one to eight. A referendum vote, in which, I regret to say, only about two-fifths of our membership recorded their votes, resulted in the one to five proposition being defeated by a vote of 15,842 against 504, and the second proposition by a vote of 12,314 against 3978. While this vote might be interpreted to indicate the fixed determination of our members to abide by the ratio which has been embodied in our laws for more than a quarter of a century, I deem it my duty to bring the subject prominently to the notice of this convention, believing, as I do, that our very best interests demand that we give it our most unprejudiced and intelligent attention.

LACK OF INTEREST SHOWN BY MEMBERS.

While the referendum is undoubtedly founded upon correct principles, the result of its use in labor organizations has not always been in harmony with progressive thought. It is an unfortunate fact, but truth compels me to say it, that our members do not give important questions submitted to their decision the careful study and intelligent thought they should, but allow themselves to be swayed by their prejudices or their fears, or display by their indifference and their failure to record their opinion their lack of interest in propositions submitted.

UNION RATIO NOT UNIFORMLY ENFORCED.

In considering the subject of a ratio of apprentices we must bear in mind these points: The ratio of one apprentice to eight journeymen is a law of the Iron Molders' Union, but is not assented to as equitable by any association of foundrymen or any employer, with but few exceptions, and is only recognized where the union has the power to compel its recognition. Thus it is an ever present danger point in our relations with our employers in prosperous seasons, and is honored more in the breach than the observance in periods of depression. I am not insensible to the force of the argument that there are employers who would without scruple hire low paid boys in preference to men were there no restraint upon them; and that knowledge, together with the reasons previously advanced, has convinced me of the desirability and advantage of a ratio which will be assented to and enforced by the best element of foundrymen, in preference to the present policy of recognition when conditions permit its enforcement. There are two parties to every bargain legitimately ratified, and if we would win the recognition of the foundrymen for a ratio of apprentices, we must give consideration to what they deem their interests as well as our own, and be prepared to liberalize, if necessary, the present ratio which, I have no hesitancy in saying, can be done without serious injury to our interests.

THE TRADE NEEDS MORE MOLDERS.

As you are well aware, the ratio of apprentices has become a very prominent subject of discussion with the members of the Stove Founders' National Defense Association. As a result of the conference agreements which have been a feature of our relations with that body since 1891, strikes, a prolific source of supply of molders, have largely disappeared in the stove plate foundries, and the supply, we hope, will soon be dependent upon the union ratio. It is to be expected that should this convention determine to increase the present ratio of apprentices or empower its representatives to negotiate with foundrymen's associations, a ratio mutually agreeable, there would be considerable discontent and complaint at the outset; but so confident am I that such a policy will result in turning out mechanics of greater competency, operate to the material advantage of this union and establish much desired uniformity, that I submit to you my strong recommendation to liberalize the present ratio of apprentices and conform it, intelligently, to the needs of a growing industry.

THE UNION MOLDERS' ATTITUDE TOWARD THE MOLDING MACHINE.

It was my privilege to call the attention of the Indianapolis convention to a growing problem of our craft—the molding machine. During the remarkable trade activity which has been a feature of the past three years the rapidly increasing demand for the products of the foundry has stimulated the introduction of molding machines where duplication of work made them profitable. The higher minimums which have been established have also tended to promote their use in the foundry. Laughed at some years ago, the machines have demonstrated their usefulness, and few there are among the molders who will deny their success or their economy on classes of work for which they are adapted.

It is no longer the simplest kind of work that is made upon the molding machine, for every year has seen an extension of its sphere, until to-day work of a very high grade is being made successfully upon them. As the grade of work made upon the molding machine improves in quality, it follows that a higher degree of skill is required of the operator. Thus, in some instances, foundrymen have found it more profitable to employ journeymen molders as machine operators upon the better class of work.

Becoming alarmed apparently at the attention given the machine question by the Indianapolis convention, and misinterpreting our purpose to mean a limitation of its output, if not actual opposition to its introduction, the foundrymen, especially members of the National Founders' Association, have determinedly opposed the proposition to employ molders as operators except, as stated above, where their skill was absolutely essential to successful operation. At several conferences with representatives of the association we have sought to reach an understanding whereby molders will be given preference as operators, but without success.

MACHINE OPERATORS ORGANIZED.

No good purpose will be served by deceiving ourselves as to the measure of success that has attended the experiment of the foundrymen in educating bright young men to be machine operators. On the common run of work they have been fairly successful, and these so called "unskilled" operators have in time become highly trained specialist molders. Taking that view of it, the Executive Board, at a meeting held in Cincinnati during September, 1901, determined to make a new departure, and granted a charter to the machine operators of Indianapolis, Ind., who were admitted to membership subject to certain limitations. I am glad to be able to say the experiment has proven very successful; wages have been advanced, the local has made satisfactory progress and is to-day represented by delegate in this convention as Machine Operators' Union No. 382.

The demand for skilled molders will not always be as great as it is to-day, and we can well conceive the time when the molder who would now refuse to take a job as a machine operator will be glad of the opportunity. I desire to emphasize one point, however, and that is, he will never be given that opportunity unless he is willing to do justice to the possibilities of the machine and shows a willingness to conscientiously assist in its development. Our original attitude toward the machine was a shortsighted and mistaken one, and the resulting injury to our own interests cannot be removed by a perpetuation of the early prejudice.

DANGER IN AFFILIATION WITH OTHER TRADES.

I realize that our interests lead in the direction of close alliances with kindred trades, but from a careful survey of the Metal Trades' Federation I am inclined to the thought that it will not be prolific of practical results. Among the organizations in affiliation are some who are not only very young in the movement, and consequently very inexperienced, but inherently weak and unable to withstand a serious attack. This weakness must necessarily communicate itself to any combination of which they are a part and prejudice its movements. In addition to this it might be urged that while the constitution of the federation expressly provides for careful investigation and consideration before a general strike is undertaken, our affiliation with the several metal trades would materially increase the danger of our local unions becoming sympathetically involved in the numerous unauthorized strikes in which their members, apparently without much effort or restraint, become involved. For these reasons I am of the opinion that our interests will be best served by remaining out of the Metal Trades' Federation and concentrating our efforts toward strengthening our position in the foundry itself.

LIMITATION OF OUTPUT.

One of the most popular charges against trades unionism is that it designs to arbitrarily limit output

and to oppose the introduction of systems and devices designed to increase the productivity of the workman. Employers' associations have used this very effectively of late years in their efforts to discredit trades unionism in the minds of the public. That the charge is, in the main, unjust needs no argument of mine to convince this convention. The Iron Molders' Union has taken the ground, and will maintain it, that it will countenance neither arbitrary and unreasonable limitation of output on the part of its members, nor equally arbitrary and unreasonable exactions on the part of an employer.

LIMITATIONS OF EARNINGS A FAILURE.

In an effort to resist this tendency some of our locals have put forth misguided efforts and have given color to the general and unjust accusation made by employers against the Iron Molders' Union. Nor has the union itself been entirely free from mistakes of this kind in its history, for many of you will have a distinct recollection of a law adopted, against the advice of many of our best thinkers, by the London convention of 1886, which essayed to prescribe a limit of \$3.50 per day upon the earnings of piece workers. It did not take long to demonstrate the impracticability of such legislation, and its unpopularity among the members in general, for the law not only remained a dead letter but was repealed at the first opportunity.

COMPLETE ABOLITION OF PIECE WORK IMPRACTICAL.

In accordance with the instructions of the Indianapolis convention a vote of the membership was asked upon the proposition to abolish piece work in the foundry. This we recognized to be a very important issue and contemplated a most radical change from the time honored system prevailing in several branches of our trade. Every effort was made to stimulate intelligent discussion in the *Journal*, but, I regret to say, our membership both in this and the subsequent vote displayed an apathy inconsistent with the gravity of the question. The vote, though a small one, was very decisively in favor of the abolition of piece work, standing 12,449 in favor and 1048 opposed.

In accordance with this expression the subject was brought up for discussion at the conference with the Stove Founders' National Defense Association representatives in March, 1900. The proposition that stove molding be placed upon a day-work basis was vigorously opposed by the conferees of the association and as vigorously urged by the union's representatives. Beyond demonstrating that the day-work proposition would meet with the strenuous opposition of stove manufacturers, the conference adjourned without much progress being made. Since that time no further attempt has been made to push the change in the stove plate foundries. As applied to those branches of the trade wherein the piece price system would be inequitable and unfair to the molder, the national union has always consistently opposed its introduction or sought to eradicate it. I am convinced, however, that in those subdivisions of the trade wherein the piece price system has been for many years the established and accepted custom, a change so revolutionary as the transition to a day-work basis would be will not only prove most difficult of accomplishment, but will develop most objectionable features and prove a disappointment to many who are now earnest in its advocacy. For these reasons I believe the interests of our members employed upon those classes of work which almost from the inception of the industry have been upon a piece price basis will be best conserved by efforts to regulate prices and conditions, rather than by any efforts we might make to abolish the system. As applied to the machinery or jobbing interests, I am unequivocally opposed to the introduction of piece work and in accord with all practical efforts to abolish it wherever it may exist.

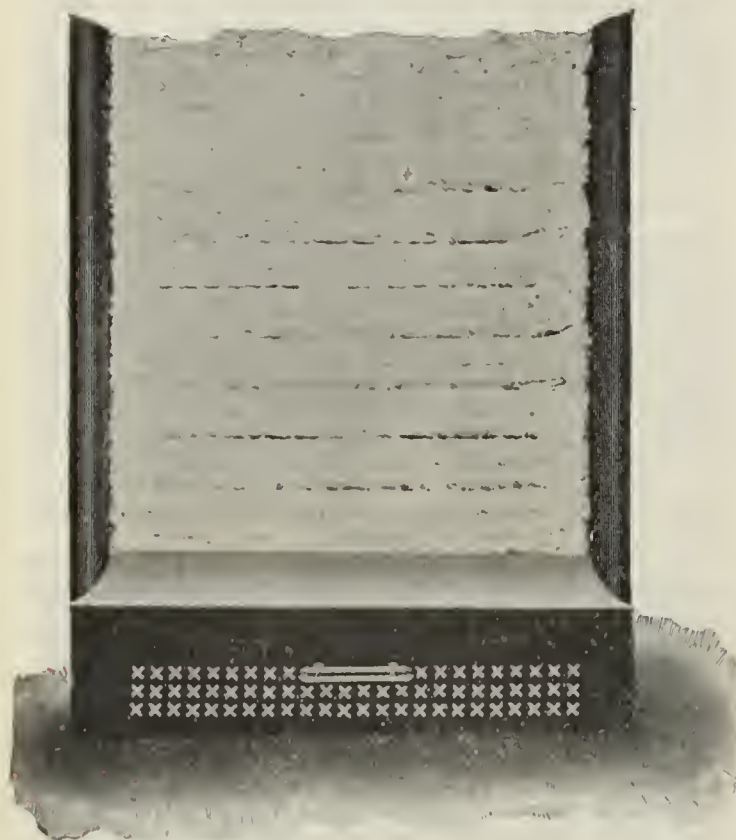
THE PLASTIC STOVE LINING MAKERS.

The manufacturers of plastic stove linings held a meeting at the Union Square Hotel, New York, on Thursday, 6th inst. The president, W. H. Colebrook of W. H. Colebrook, Sons & Co., manufacturers of Crown stove clay, Syracuse, N. Y., called the meeting to order and the minutes of the previous meeting were read by the secretary, A. W. Perkins of the Rutland Fire Clay Company, Rutland, Vt. Other members of the trade present were Messrs. McFarland of the Bridgeport Crucible Company, Bridgeport, Conn., manufacturers of Champion stove clay; Williams of the Williams Stove Lining Company, Taunton, Mass., manufacturers of Eagle stove clay, and Wilson of Newburgh, N. Y., manufacturer of Wilson's Superior stove clay. The condition of business was thoroughly discussed and all expressed

themselves well satisfied with the trade now enjoyed. They decided to let present prices stand until their next meeting, which will be held in December.

Luster Backwalls for Open Grates.

A new line of goods which the H. Adler Company, Pittsburgh, Pa., have patented and are manufacturing this season is what they term the Luster Backwall for open grate fire places, intended for use with natural gas. In the accompanying illustration is shown an example of one of these backwalls, which are made entirely of stamped sheet steel, upon which is placed the asbestos fiber. This style of construction is claimed to be more durable and to burn better than the asbestos



Luster Backwalls for Open Grates.

back. These goods are furnished with asbestos, brass or black side flanges, in four sizes, from 18 to 24 inches wide.

Acorn Stoves and Ranges.

Rathbone, Sard & Company, who claim to be the oldest American stove makers, with Eastern foundries at Albany, N. Y., and Western foundries at Aurora, Ill., have favored us with a copy of Catalogue No. 67, which has just been issued for the season of 1902-1903. This publication is one of the most ornate specimens of book making which has ever been issued by a stove house. It is of large size, the pages being 10 x 12½ inches. It is substantially bound in boards covered with muslin of a purple color, which is at the same time attractive and conspicuous. Both front and back covers bear unique designs in gilt. The fly leaves are printed with an appropriate design, consisting of infinite reproductions of the company's trade-mark, surrounded by emblems of the founder's art. The paper used is egg shell paper, which is not often found in a trade publication. A half-tone tint surrounds each page. The engravings are printed in black, while the letterpress is printed in brown, and these colors, in combination with the tinted border, make each page a view in colors. The engravings are usually quite large, the size of the page enabling the stoves and ranges to be thus shown on a large scale, which brings out their special features much more completely than if the cuts were of small size. The catalogue contains 96 pages.

In the arrangement of the contents the goods have been divided into departments. The department divi-

sions are named at the bottom of each page. Thus, "Steel Ranges and Steel Cooks, pages 7 to 20," appears at the bottom of each page devoted to this department; in the same manner in the next department appear the words "Cast Ranges for Hard Coal, pages 21 to 41;" the next division bears the legend "Cast Ranges for Soft Coal, pages 42 to 46;" the next division covers "Cast Ranges for Wood, pages 47 to 51;" the next, "Cooking Stoves for Coal, pages 53 to 57;" the next, "Cooking Stoves for Wood, pages 59 to 65;" the next, "Base Burners for Hard Coal, pages 67 to 74;" the next, "Surface Burners for Hard Coal, pages 75 to 76;" the other divisions cover laundry stoves for coal, cannon stoves for coal, air tight heaters for coal, oak stoves for coal and wood, heating stoves for wood and steel air tight for wood. This arrangement enables the different divisions to be found very quickly, and is undoubtedly an improvement over the arrangement in the company's previous catalogue, which consisted of the use of an insert page for each department.

It will be observed from the foregoing enumeration of the different departments that the line shown by the company comprises a thoroughly complete variety of all classes of goods required by the stove trade. The goods also cover every grade needed by the trade, from the most highly finished, elaborately decorated and expensively constructed stoves to the low priced lines adapted to popular use. The conspicuously new goods shown in this catalogue include the following: The Modern Acorn, six-hole steel range, of medium grade, having a polished steel body, double asbestos linings throughout, patent brick lined fire box, high ventilated oven, sheet flues and every other feature required in all modern ranges, together with full nickel ornamentation; the Victor Acorn velvet finish four and six hole steel range, of the popular grade, having ends interlined with asbestos, heavy ventilated iron linings, together with other features which make it of thoroughly satisfactory construction; the Classic Acorn six-hole cast range, of the highest Acorn grade, furnished with heavy brick linings, double draft removable grate, heavy lined centers, ventilated high square oven, curved oven shelf with broad swelled edge, and in all respects most attractively finished both with regard to the molded work as well as decorations; the Perfect Acorn six-hole cast range, of medium grade, which is also constructed with a view to efficient service and attractive appearance; the Federal Acorn six-hole cast range, of an intermediate grade, which is also most attractively dressed and furnished with full modern features; the Empress five and six hole cast range, of the loose hearth pattern, with high carved base and more nickel ornamentation than usually found in ranges brought out for popular use; the Pride Acorn and Merit Acorn cast ranges for wood, which are attractive constructions, the same patterns being known respectively as the Lotus Acorn and Jubilee Acorn wood cooks; the New Royal Acorn base burner of the highest grade for hard coal, which is of massive construction with full nickel dome, large mica surface, broad deep flues, hot air circulation at the back of the stove and nicked base rails, hearth plate, door panels, knobs, &c.; the Brilliant Acorn base burner, of standard grade, for hard coal, original in design, with a new circulating system by which cold air is taken in at the bottom of the stove through an opening 4 x 7 inches, and forced in the large flue through the hottest part of the stove, making a powerful double heater if desired; the Rectort Acorn air tight heater for hard or soft coal, and the Hecla air tight also for hard or soft coal, less elaborately finished; the Acorn Oak, hard coal pattern, with illuminated front; the Glen Acorn oak for any fuel; the Charm Oak, a low priced construction, and the Garden Acorn, a new steel air tight with end door.

The company's agents are offered valuable suggestions in getting up advertising matter on some of the pages of the catalogue. For instance, on one page is reproduced the Acorn guarantee bond, which is furnished with every stove or range bearing the trade-mark name Acorn, which has for so many years been a guarantee of excellence. On another page is a stove parable,

which applies the parable of the sower of seed to the stove trade most happily. Another page shows a number of newspaper electrotypes ready for use, with space for the agent's name at the bottom. Another page refers to the Acorn sign, intended for the front of a dealer's store, giving suggestions how to hang the sign, as well as a complete description of it. A feature of interest is a page devoted to a quick discount table. This table covers discounts frequently used by manufacturers of stoves and hardware specialties and can be used to quickly figure the net cost of any article sold at the discounts named.

A collection of views is given, showing the company's Albany works, founded in 1830, and the Aurora works, established in 1890, as well as the Detroit, Chicago and San Francisco warehouses. Interspersed through the catalogue are illustrations of features of strength in steel ranges, as well as new ideas in construction embodied in the cast ranges, cooking stoves and heaters.

BALANCING A COMBINATION JOB.

BY BALLAST.

"Hearing is believing, but seeing is the naked truth." The reading of this article is, of course, equivalent only to hearing, but the time may come when some of the readers of *The Metal Worker* will be called on to look at such a case as we describe below. Then they will see the naked truth in combination work as we have seen it. If they tackle the problem and solve it successfully, they will, we think, agree with us that the experience gained is worth any half dozen of their own jobs they ever did.

In this instance the heating man evidently allowed his brains the same scope that the plasterer of the house did. His ideas certainly indicated that between two houses there could be no more difference, in his case, than there would be in that of the plastering of them. The matter came up to us in this way:

A gentleman, whom we will call A, came into our office one day last winter, and after the usual business small talk and preliminary assurances that he had been referred to us as being the loftiest authorities on the subject of heating, announced that he was possessed of a human error in its most aggravating form. He wanted us to help him find a name for it, and incidentally explain why it did him no service as a heating apparatus—that is, one part of it was of no use to him. He said it was a combination of hot air and hot water. What puzzled him most was to discover wherein the combination lay. Another thing that puzzled him was that his neighbor B just across the street, with precisely the same equipment, furnace and all, was thoroughly pleased with it. B had had his put in first, and it was on his recommendation that A had had the same man put a similar outfit in his house at the same price.

During one season's experience with it A had tried hard to get the heating man to come and remedy matters, even offered him financial inducements to a reasonable extent if he would improve the job. These entreaties had been met with refusal and the assertion made that no improvements were necessary. B's job was held up as illustrating the uselessness of giving some people a good job, the inference being, of course, that B knew how to handle a thing when he got it, and A didn't.

We met A at his house the following day by appointment, and were shown through it. It was a three-story and basement house in the middle of a block. The extension at the rear was two-story and basement and exposed to the north and west. The main house was warmed entirely by hot air, and the extension, presumably, by hot water. The house was decidedly comfortable, but the extension felt as if no heating provision had ever been made for it. The radiators and risers were barely warm. The furnaces proved to be of reputable make and of generous size for such a house. The fire was good and clean, but what would be called a slow fire.

We then crossed the street, a block further away, to

B's house. From an architectural standpoint there was little difference between the two. We found the same number of radiators in B's extension as in A's; also the same sizes; furnace the same size and make, and in all other respects the systems were identical. B's house, including the extension, was at a uniform temperature. This puzzled A so much that it was with difficulty we could get him to listen to us when we started our explanation. He did not grasp the idea readily, but, after seeing the light, as it were, he admitted that it was the naked truth.

His house faced south, which made it an easy matter to warm that end of it; the rear, north, being largely protected by the extension, made no abnormal demands on the furnace, which would indicate that, taken all through, the hot air part of the system was not taxed to any great extent. Naturally the fire was gauged to cater to these requirements, which kept it burning too slowly to heat the water to any serviceable temperature.

B's house, on the opposite side of the street, of course faced north. This fact compelled him to run his furnace more strongly than A in order to warm the front rooms sufficiently. This favored the hot water end to such an extent that the water, on an ordinary winter's day, averaged in temperature from 140 to 150 degrees F. The result was that B's extension was warmed satisfactorily most of the time. The main house being well warmed, and the tendency of the heat being toward the rear, also helped the extension. Everything favored the extension. The whole work seemed well balanced; but, in the light of A's job, it certainly seemed that such an end was arrived at more by good luck than good management.

Now the radiation that made B's extension comfortable, figured out according to cubic contents, was in the proportion of three to the hundred on the first floor, and two and one-half on second floor. Rather scant basis to work on in hot water, even under favorable conditions.

The generator was of cast iron and placed about 10 inches above the usual point of surface of the fire. It contained heating surface equal to 1 square foot to 30 feet of radiation. Now, taking A's job into consideration again, with its easier running fire, and the greater demand for radiation on account of exposure, it can readily be seen that, as it stood, it could not be of much service. The first thing we calculated on was to get a proper amount of radiation throughout.

We have noticed in a great many of the combination jobs we have put up that 170 degrees seemed to be the limit of temperature to which the water would rise. This we account for by the average rate at which city fires are run. With that experience in view we increased the surface to 4 feet to 100 on the first floor, and 3½ to 100 on the second floor. These ratios, where there are three exposures to consider and an ordinary amount of glass surface, will generally give the desired results in cold weather, if water can be maintained in the neighborhood of 170 degrees. The next thing facing us was that we must devise a means of increasing the generator power and arrange matters so that a brighter fire should be kept up. With the fire at its normal stage in this furnace it would not have mattered if we had made the whole inside of the furnace above the fire pot into heating surface for hot water, we could not have reached 170 degrees.

We first lowered the existing generator to within 5 inches of the usual point at which fire was kept; then by means of spiral coils of 1¼-inch pipe we increased the heating surface to 1 square foot to 18 square feet of radiation. The presence of so much water surface inside the furnace naturally lessened the effect of the fire in creating hot air. Hence the fire had to be run more strongly to do its hot air work. This, coupled with the increase in heating surface, brought our generative power up to about where we wanted it; slightly over, if anything. We warmed that extension easily and satisfactorily after that, and while the means taken to secure the results may to some appear excessive, yet we can assure them we would not care to tackle another one and use less surface in generator and in radiation. Of course, we mean where the conditions would be the same as in the above case.

The Michigan Stove Company's Catalogue.

What is called a supplementary catalogue of Garland stoves and ranges has just been issued by the Michigan Stove Company of Detroit and Chicago. This supplementary catalogue, however, is of such a high character in every respect that it would reflect credit on any stove manufacturer who would offer it as his chief work in the catalogue line. It is of large size, the pages being 10 x 12½ inches, enabling the illustrations of the stoves and ranges to be on a large scale. It is bound in stiff olive colored covers, the outside pages of the cover being ornamented with artistic designs. The Garland trademark is conspicuous in this connection.

The steel ranges shown comprise the Satisfaction Garland, Jr., for soft coal or wood, and the Sensation Garland, Jr., for hard coal or wood, which are six-hole ranges for the people at popular prices; the New Special Garland, for soft coal or wood, and the Signal Garland for hard coal or wood, which are well made six-hole ranges of still lower price; the New Staple Garland for soft coal or wood, and the New Savoy Garland for hard coal or wood, which are also moderate priced six-hole ranges; the Sunrise Garland, a four-hole range for either hard or soft coal or wood. The Sunrise Garland is also furnished in the form of a square steel cooking stove, adapted to the use of coal or wood. The Iron Age Garland is a new four-hole cast range, adapted to soft coal or wood and fitted with a steel oven, pouch feed, duplex grate, two flues, aerated oven and full nickel trimming. The New Woodland is a square cast cooking stove, mounted on feet only and intended for the exclusive use of wood. The Oak Garland is a new oak stove of the J series, having a square base, intended for any kind of fuel and constructed absolutely airtight. It has a heavy ball bearing coal grate with draw center, preventing the formation of clinkers. The Zenith Garland is a surface burner for soft or hard coal, of new and attractive design, having a square polished steel body with cast base and top. It can also be furnished with magazine for burning hard coal if desired. The new base burners shown comprise the Art Garland of the New Model series, which is quite a departure from the well-known designs, and the Art Garland New Series with patent nickel plated reflector top. The Gem laundry stove is also shown, as well as stoves with numbered parts to assist in ordering repairs.

ODD PLATES.

THE LINCOLN STOVE COMPANY, Cleveland, Ohio, are enlarging their plant at the corner of Euclid avenue and First street by taking in the building formerly occupied by the Lodge Cigar Box Factory. This expansion will enable the company to more than double their present output, and will necessitate making a considerable addition to their force of workmen.

MAHOOD & Co., 14 North Second street, Philadelphia, Pa., are sending to the trade a postal card bearing an interesting discourse about tags on Stove Repairs.

THE SUFFOLK STOVE COMPANY, Suffolk, Va., will, in the near future, begin the erection of their new factory on the line of the Suffolk & Carolina Railroad.

THE MALLEABLE IRON RANGE COMPANY of Beaver Dam, Wis., have issued a catalogue of 24 pages, bound in a brown cover, showing one of their Monarch Malleable Iron and Steel Ranges on the front cover, which is being viewed with admiration by a chef. The title page presents a bird's eye view of the company's plant, and is followed by pictures of their counting room, mounting shop, sheet metal shop and foundry. The tale of the Monarch Steel Ranges is told very entertainingly in detail, so that their constructive features and operation may be thoroughly understood. An illustration is given showing the oven section with the malleable iron frames for strengthening the seams; also views of the fire box section with water back and with lining; the back flue, extension to the fire box and the reservoir. The tops are of the French style, and are made of malleable iron. Half-tone engravings show the finished

Ranges in the variety of styles in which they can be furnished. The Monarch Range is one that the house have selected for a leader, while the Mound City Range is also well qualified to establish popularity through the excellence of its construction and equipment.

THE TUTTLE-ALLEN STOVE COMPANY, Kansas City, Mo., have been incorporated with a capital stock of \$20,000 by Frederick E. Tuttle, William E. Allen, Lulu M. Tuttle and Laura L. Allen.

THE Jones Patent Side Wall Warm Air Registers form the subject of a circular and a price-list recently sent out to the trade by the United States Register Company, Limited, of Battle Creek, Mich. A feature of the four-page circular is the plan of a residence heated with a furnace and convex and floor registers, and the same residence heated with a furnace and the Jones Side Wall Registers, with comparative estimates of cost, showing a substantial balance in favor of the Jones system, together with a material advantage in heating. A number of reasons why the Jones Side Wall Registers should be used are categorically stated on the last page of the circular, the front page giving views of the Register, with sectional cuts showing the methods of its installation for one and two floors. The company are also distributing blotters addressed to the furnace dealer, giving full information regarding their Register.

L. W. HEMP of Hemp & Co., St. Louis, Mo., the well-known manufacturers of Stove Pipe, Air Tight Heaters, &c., has recently gone on a pleasure trip to the Pacific Coast.

THE JACOB H. YOUNG STOVE COMPANY have been incorporated in New York with a capital of \$100,000. The incorporators are Charles Sanial, Robert Ingram and J. C. Thomson.

J. KONTNY is now sole manager of the Chicago branch of the Reading Stove Company. Up to June 1 Ross & Kontny were the Chicago representatives of the Reading Company. Mr. Kontny has just returned to Chicago from New York, where he made arrangements for the manufacture and sale of a new Steel Range. One carload of these Ranges, which is known as the Kontny, have already been placed with local and nearby jobbers, and will be delivered some time this month.

JOHN H. ROSS, who was formerly one of the managers of the Chicago branch of the Reading Stove Company, is now engaged in the Hardware business at Valparaiso, Ind., having purchased an interest in a retail store.

THE Chicago branch of the Michigan Stove Company are receiving numerous requests for their game counter, one of the advertising novelties brought out by the company, and which sprung into immediate popularity.

THE TWIN BURNER VAPOR STOVE COMPANY division of the American Stove Company, St. Louis, Mo., have removed their entire plant, including office and sales-rooms, to 906-908-910 South Ninth street.

GEORGE W. BUTCHER, secretary of Southard, Robertson & Co. of New York City, is enjoying a well earned vacation. His itinerary includes a trip by the Old Dominion Line to Old Point Comfort, Va.

W. H. COLEBROOK, SONS & Co., Syracuse, N. Y., manufacturers of Asbestos Furnace Cement and Crown Stove Clay, have had a long experience in their line of trade, but never before, they say, have they had such a large volume of business as this year. They have had to employ a much larger force of workmen and have consequently turned out a much greater product than in any previous year. Their Furnace trade has been especially heavy, owing to the great increase in the number of Furnaces manufactured.

"THE LARGEST PATTERN WORKS IN THE WORLD" is one of the claims presented in a new circular issued by the Gobeille Pattern Company, Cleveland, Ohio. It is a large sized folder, partaking of the artistic quality which characterizes alike the company's Stove Patterns and their trade literature. In stating that they make more Patterns than all the other public Stove Pattern shops in the country combined, the company give a list of

leading Stove concerns whose Patterns come from the Gobeille shops. All the company's Stove Patterns are made from designs and under the personal superintendency of Jos. Leon Gobeille.

THE details have finally been arranged by which the Pittsburgh Stove & Range Company of Pittsburgh will build a large Stove works at Beaver Falls, Pa. The various plants of this concern in Allegheny and Monongahela City, Pa., will be concentrated at Beaver Falls.

THE entire issue of stock of the Sangamon Mfg. Company, Springfield, Ill., has been taken and the shareholders were to meet at the end of this week for the election of officers. The company have secured the abandoned plant of the Patrons' Supply Company, at Mildred, southeast of Springfield, and will immediately begin the manufacture of Mine Tools and Cars, later going into the production of Stoves. The buildings secured are three in number, two being 60 x 600 feet and the other 80 x 100 feet. The principal promoters of the enterprise are Thomas Dwight, Luther Davis and Irwin Barker, all of Springfield.

E. J. HOLT, who for the past three years has been employed as secretary of the Glazier Stove Company, Ann Arbor, Mich., has resigned his position to engage in the house furnishing business.

THE RICHMOND STOVE COMPANY, Norwich, Conn., are making a number of changes at their plant at Thamesville. The building at the south of the factory, formerly used for storage, is being remodeled for an extension of the company's foundry facilities. This change will give employment to 25 additional molders and ten helpers. A shaft furnace for Foundry No. 2 is being set up which will melt about 18 tons of iron a day.

ANNUAL OUTING OF THE CHICAGO RETAIL HARDWARE ASSOCIATION.

The Chicago Retail Hardware Association held their eighth annual picnic on Wednesday, July 30, at Palos Park, located on the Wabash Railroad about 20 miles from Chicago. The attendance was unusually large, but through the co-operation of the railroad officials with the transportation committee of the association, ample facilities were afforded, making the trips going and coming very enjoyable. The day was ideal and the efforts of the committees on entertainments were crowned with success. The morning was devoted to general social enjoyment. Immediately after dinner, one of the most important functions of the day, the association took up a line of march, conducted by President D. McLaughlin and Treasurer J. L. Smith, and preceded by a band of 25 pieces, paraded about the grounds into the pavilion, where the members formed in a double row with a single connecting line, forming the letter H for Hardware. W. H. Bennett, local manager of the Reading Hardware Company, introduced D. W. Simpson, president of the Wilcox Mfg. Company, Aurora, Ill., who, on behalf of the association, presented Mr. McLaughlin with a gold headed cane in token of the esteem in which he is held by his fellow members.

Mr. McLaughlin in replying, after thanking the association for the unexpected gift, said that he was well aware that the success of the day's outing was largely due to the efforts of his maligned friends, W. H. Bennett and H. H. Roberts. He appreciated highly the honor bestowed upon him and promised to reply more fully to the members at their next meeting.

The formalities over the entire gathering joined with zest in the games which had been prepared by the committees. One of the most popular modes for the day's enjoyment was dancing in the pavilion. The races, in which the dealers, their wives, their sisters, their cousins and their aunts, as well as the children participated, were exciting and provoked much merriment. The judges of the contests were W. H. Bennett, H. H. Roberts, S. P. Johnston, D. W. Simpson and H. E. Builen.

Among the manufacturers, jobbers and agents present were the following, all of whom were from Chicago, except as noted:

Barrick, Wm. H., Abram Cox Stove Company.
Cutler, W. S., Ranney Refrigerator Company.
Dennison, C., C. Sidney Shepard & Co.
Fentress, Jas., Cleveland Foundry Company.
Geschwind, E. O., Landers, Frary & Clark.
Holt, Geo. D., National Enamelling & Stamping Company.
Hall, A. B., Whitman & Barnes Mfg. Company.
Johnson, J. K., Allerton-Clarke Company.
Lyman, W. B., Brand Stove Company.
Peglow, L. A., and Simons, E. L., Wells & Nellegar Company.
Roberts, H. H., and Partridge, W. T., *The Iron Age*.
Schmelzer, Louis, American Wringer Company.
Smith, J. L., Jr., Lisk Mfg. Company, Limited.
Stewart, A. T., A. T. Stewart & Co.
Vollrath, Carl, J. J. Vollrath Mfg. Company.
Wildener, M. B., Cook & Van Evera Company.
Whitlock, H. W., Reading Stove Works.

THE COMMITTEES.

Special credit is due to the several committees of the association for the successful manner in which all arrangements were made. These committees were composed as follows:

Executive Committee—Anthony Engelhardt, Frederick Ruhling, J. L. Smith, Frederick Kurtz, W. B. Costello, E. L. Sommers.

Transportation Committee—J. L. Smith, G. A. Lott, Geo. A. Neebe, J. H. Powers, H. E. Gnadt, W. J. Krueger, H. O. McClure.

Entertainment Committee—F. F. Porter, A. L. Adam, Martin Engelhardt, Otto Hagen, J. F. Borchardt, H. L. Peterson, O. Stebbins, Christian Carr, Jr.

Bowling Committee—Geo. A. Englehardt, E. Sanders, F. H. Schanze, C. A. Dalstrom, Hans Fehr, John Hora.

Games Committee—W. T. Gormley, D. McLaughlin, L. Rosenberg, Grant W. Porter, J. C. Schubert, J. M. Ruedell, B. F. Boysen, J. C. Wirths.

THE IRON AGE GUESSING CONTEST.

As an incident of the picnic the Chicago office of *The Iron Age* offered to the lady guessing nearest to the total number of advertisements in *The Iron Age* of July 31 a silver cake dish, and to the gentleman making the closest guess a dress suit case. Much interest was manifested by those present and the total number of ballots or guesses cast was 394; the lowest guess was 103 and the highest 14,197. Mrs. W. F. Rust, daughter of Treasurer J. L. Smith of the Association, and E. W. Drumm, connected with the New York Belting & Packing Company of Chicago, were the successful contestants, each guessing 1313. The total number of separate advertisements in *The Iron Age* of July 31, as counted by W. H. Bennett, local manager of the Reading Hardware Company, who had been selected as judge of the contest, was 1325.

The Gem Stove Pipe Damper.

Kramer Brothers, Dayton, Ohio, proprietors of the Dayton Stove Repair Works, are the manufacturers of the Gem stove pipe damper, of which an illustration is given herewith. Special attention is called to the long



The Gem Stove Pipe Damper.

and sharp pointed spindle with which the damper is provided and also the handsome nickel plated handle. These dampers are made in 11 sizes, from 3 to 10 inches in diameter.

CURRIE COMPANY, wholesale and retail Stoves, Hardware, Sporting Goods, plumbing, steam and gas fitting, &c., Atlantic City, N. J., are erecting a fire proof storehouse, four stories high, 50 x 105 feet. The new building adjoins their Atlantic avenue establishment in the rear. When improvements are completed the company believe that they will have one of the largest and best equipped stores of the kind in the State. The dimensions of the salesroom on the first floor will then be 50 x 205 feet.

gree. The benefit of the full depth is secured, so that there is practically no waste room, while the amount of literature that can be accommodated is large. While the case described is not full, it contains in the neighborhood of 1500 pieces of printed matter.

A Suggestion.

To any who may contemplate installing a card system, and who are not familiar with card indexes, it is suggested that the best quality of cards and guide cards be purchased. When they are frequently used even the best are none too durable, and the slight expense over poorer ones is insignificant compared with the time and trouble incident to recopying the matter on the cards.

Never-Burn Drip Pan.

The Bronson-Walton Company, Cleveland, Ohio, for whom John H. Graham & Co., 113 Chambers street, New York, are direct representatives, have just supplemented their line of Brown Beauty roasting pans, recently illustrated in these columns, by the addition of the Never-Burn dripping pan, here shown, which has some of the characteristics of the roaster, at much less cost. The Never-Burn pan has coppered steel rods along the bottom surface lengthwise, raising it from the oven floor and leaving an air space, which serves to keep an

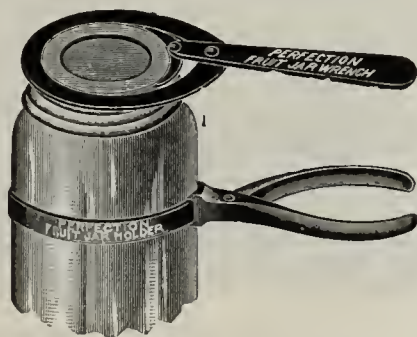


Never-Burn Drip Pan.

even heat all around the pan and prevent burning on the bottom. The steel rods also take all the wear and permit the hot pan and its contents to slide easily in and out of the oven regardless of the weight of its contents. This style of pan is made variably of the best quality of sheet metal, as follows: Smooth, from Wood's refined iron; polished, from Wellsville polished steel, and still a third group from heavy tin plate. The handles are so secured to the pan that in lifting they stop in a horizontal position and at right angles with the pan, thus preventing burnt fingers in handling a hot utensil. The pans are all uniformly 2½ inches deep and of the following dimensions: 9 x 14, 10 x 12, 10 x 15, 11 x 16, 12 x 17 and 16 x 17 inches.

The Perfection Fruit Jar Wrench and Perfection Jar Holder.

Drake & Mills, Cleveland, Ohio, are introducing the fruit jar wrench and holder shown herewith. The wrench is stamped from hard steel and is nicked on



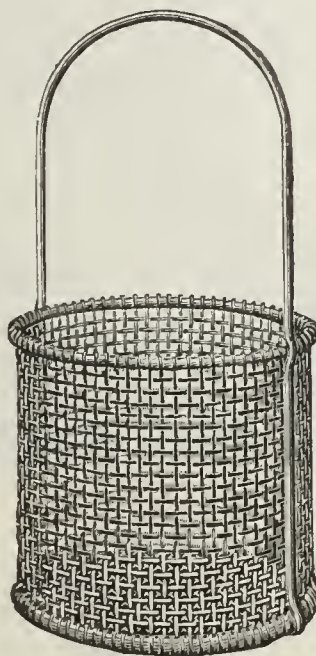
The Perfection Fruit Jar Wrench and Jar Holder.

copper, which produces a dull white finish. It is absolutely unbreakable, it is stated, and fits all sizes of fruit jar covers. It is built on the lever principle, the fulcrum crowding the arc of a circle against the jar top, which is surrounded by an annular ring, in such a way as to make a positive grip, without injuring the cover. The holder is designed to be used in connection with the wrench in holding the jar while tightening the cover and in carrying the hot jar to prevent being burned, obviating the necessity of wrapping the jar with a wet

cloth. There is no danger, it is remarked, in using the holder, as it would be impossible to crush the jar, as the band is of light flexible steel and makes a contact about the whole circumference of the jar. The holder is made from pressed steel and will fit any pint, quart or half gallon jar. It may also be used for tightening and removing the Canadian tops. The manufacturers express their willingness to send sample and give full information and prices to the trade.

Aluminum Dipping and Plating Baskets.

The accompanying cut represents an aluminum dipping and plating basket offered by Edward F. Smith &



Aluminum Dipping and Plating Basket.

Co., 23 Center street, New Haven, Conn. A special cloth is made for the baskets, while hard wire is used instead of soft to make them more rigid and less liable to be knocked out of shape. It is explained that the wires are crimped both ways of the mesh, so that the meshes are more even and the wires less liable to slip out of place; also that either iron, brass or copper wire is used, and that the frame work is very thoroughly put together. The baskets are made in a variety of styles, sizes and meshes, and the firm remark that they are ever ready to carry out the ideas of customers for any special baskets suited to their work. The baskets are referred to as particularly adapted to use in washing and dipping (except in potash), as acids have practically no effect on them, and they do not retain so much moisture and are not breakable as are the earthen ware.

A Wash Day Window Display.

A very effective window display recently made by the Los Angeles Hardware Company, Los Angeles, Cal., was devoted entirely to washday necessities. Four sizes of galvanized washtubs and two clothes baskets were set up on their sides to form a background. In front of these was placed a row of various sizes and makes of wringers. Then came a row of rollers for the wringing machines and a mass of clothes pins. In the foreground, next to the window, were placed numerous kinds of irons, from the largest sized charcoal burning iron for tailors' use down to the tiny iron used on babies' dresses. Separating these were coils of wash lines, both wire and hemp. The display is said to have attracted a great deal of attention. The idea of making special window displays covering certain lines of goods is one that has been found profitable, and it can be recommended to the notice of retail store keepers, as it calls for a very moderate amount of intelligence and taste to make an exhibit that will attract the attention of those who pass a store.

WILLIAM C. RAPELYEA, Danbury, Conn., bid \$2645 and secured the contract for plumbing the Danbury High School.

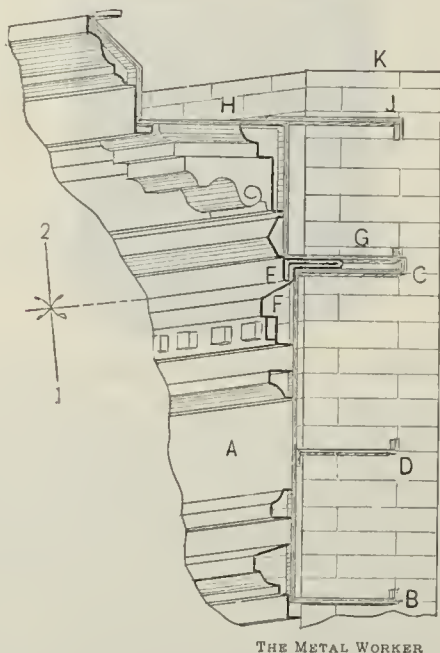
Putting Up Galvanized Iron Cornices.

BY WILLIAM NEUBECKER.

PART III.—ERECTING CORNICES IN SECTIONS, AND CORNICES OVER SHOW WINDOWS.

It is often the case that a cornice, say 10 feet high and 4 feet projection, cannot be hoisted and set on the wall in one piece. It must, therefore, be made in two sections, as shown by 1 and 2 in Fig. 8. The lower section A is placed upon the wall B in the usual manner, the iron brace having the anchor B extending into the wall at the bottom, and the anchor C at the top. Another anchor is placed in position, as at D. The wall can now be built up to the top of the lower section, as shown by C. It will be noticed that the metal from the dentil course F is carried up and turned over, as shown at G, which allows the locking of the upper section, as shown.

The wall being carried up flush with the top flange and anchor C, the upper section 2 is set over the lower section, having a drip, as at E, the flange of which goes



THE METAL WORKER

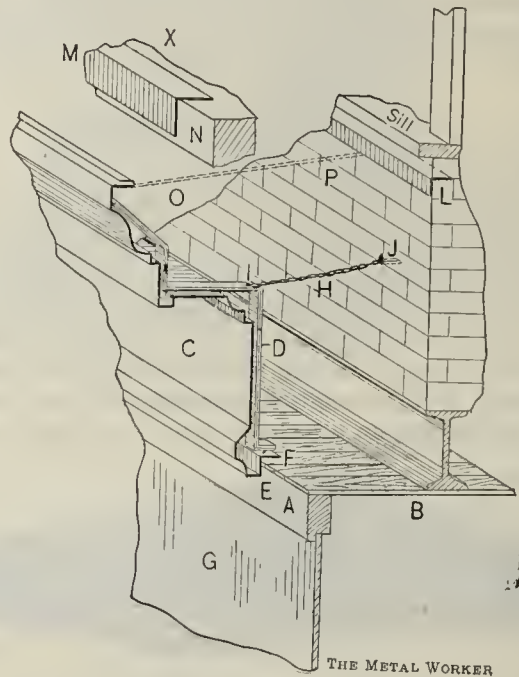
Putting Up Galvanized Iron Cornices.—Fig. 8.—Setting Cornices in Two Sections.

between the lock G, as shown. The iron brace H is placed in position, as before described in part II, before the cornice is set, having the anchor G attached to the main brace. When the cornice is properly set and fastened, the anchor J is put in position, after which the wall is carried up as high as K, ready for the iron or wooden lookouts to receive the roofing boards. In this manner a cornice of any height can be set, dividing it into as many sections as is desired.

In some of the larger cities the law compels the use of galvanized iron cornices over all show windows or store fronts. The method which is usually employed in fastening these store cornices is, however, so distinctly non-fireproof that the writer desires, in this connection, to call attention to it and suggest a remedy. In Fig. 9 is shown an illustration of the method now in vogue, in which A shows the top frame of the show window projecting from the line of the wall 12 inches, as required by law. After the show window is in place the ceiling boards B are placed in position, as shown. After this the cornice C, in which the brace D has been placed in the shop, is set on the ceiling boards. The drip E is high enough to hide the joint between the ceiling boards and frame A. As shown at F, a small angle is bent at the bottom of the brace to support the cornice. The drip is drawn tightly against the top frame A and nailed through the flange, as shown at F. Through the hole in the brace I a wire is fastened, as shown by H, and then fastened to the wall by means of the wall hook J. By using a rod to twist the wire, as

explained in the previous chapter, the cornice can be drawn in as desired.

So long as there is no danger of fire the cornice remains, but as soon as a fire occurs and the glass G is broken and the frame A and ceiling boards B begin to burn, thus weakening the frame A, the cornice comes down with a crash and defeats the object for which it was intended. If simple wrought band iron supports were constructed, as shown in Fig. 10, the danger of accident would be avoided, as no matter whether the

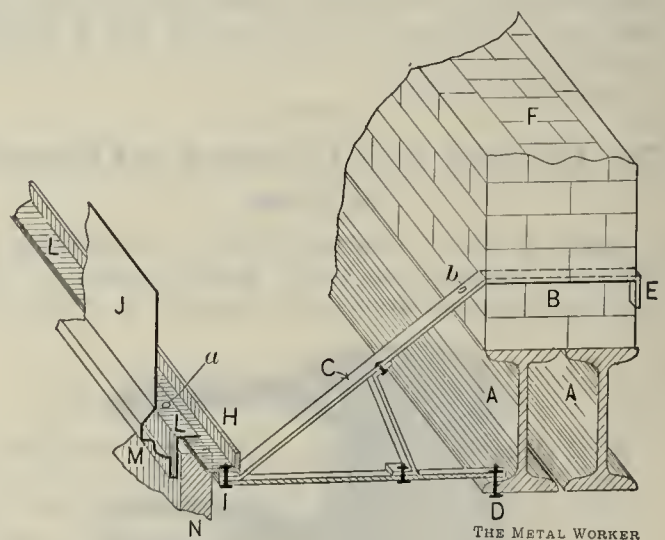


THE METAL WORKER

Fig. 9.—Non-Fireproof Method of Putting Up Store Cornices.

wooden frame was burned the cornice would remain the fire proof construction which it was intended to be.

The explanation of this construction, in detail, is as follows: A A represents the iron beams which span the opening of the store on which the brick wall rests, as shown by F. One-half-inch holes should be drilled into the flange of the beam at D about 3 feet apart. Then the iron supports, shown by C and made from $\frac{3}{8} \times \frac{1}{2}$



THE METAL WORKER

Fig. 10.—Wrought Iron Supports for Fire Proof Construction.

inch band iron, should be bolted to the flange 3 feet apart, as shown at D, the support passing through the wall a few courses above the beam, as at B, and being turned down at E. Knowing the thicknesses of the wall and the height of the beam and brick work, these supports can all be gotten out in the shop by the iron worker. Along the front, in a true line, an angle iron, H, should be run the entire length of the building or cornice, bolted, as shown at I, to the two bands of the support. Holes to admit $\frac{1}{2}$ -inch bolts should be punched at intervals of about 3 feet along L L of the angle, then when setting the cornice, partly shown by J, upon the angle iron L L bolts could be put through the flange of the drip, as shown at a. Of course band iron braces

must be inserted in the cornice, care being taken to make the drip M deep enough so as to pass the frame N under the same. When the drip is bolted the cornice should be drawn plumb by means of heavy wire passed from the brace in the cornice through the hole *b* in the support or band iron straps could be bolted to the cornice at *b*.

In this manner the cornice would be free from any wood work support. When planking the top of the cornice for the roofing, iron or wooden supports are sometimes used. Assuming that O P, in Fig. 9, is the pitch of the roof, care should be taken to have a cap flashing, L, built in as the work progresses below the sill, as shown. This is better shown in diagram X, in which N represents the brick course and M the cap flashing which is to be built in.

[THE END.]

Sheet Metal Panels in Marble Finishes.

Very artistic and attractive effects are produced by the imitation marble finishes applied to stamped sheet steel panels by the Brooklyn Metal Ceiling Company, 283-287 Greene avenue, Brooklyn, N. Y. We present herewith two examples of this work, which will give some idea of its appearance. In Fig. 1 is shown a section of wainscoting containing panels in black and white marble finish, with cap rail and base finished in imitation of Tennessee marble. An imitation onyx panel is given in Fig. 2. This panel is 22 inches square and presents a very fine effect. The work is finished in a durable manner. The coating is baked on the metal, and the manufacturers claim that it will not chip or flake off with ordinary wear. The fact that the sheets are stamped after they are coated is a convincing testimony

as their marble finishes and have the advantage over enameled porcelain tiles, as they are embossed and therefore present a richer appearance, while the cost is claimed to be only about one-quarter the price of the porcelain tile. These metal tiles are specially adapted for use on the walls and ceilings of bathrooms and stores.

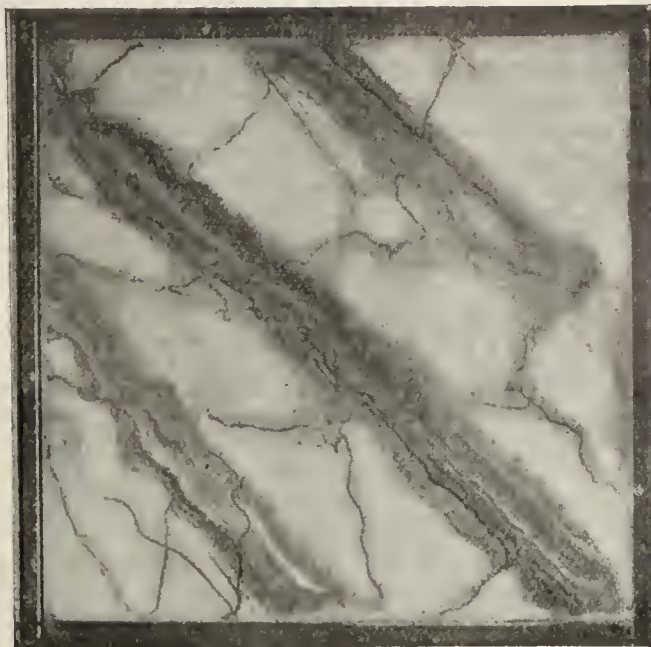


Fig. 2.—Imitation Onyx Panel.

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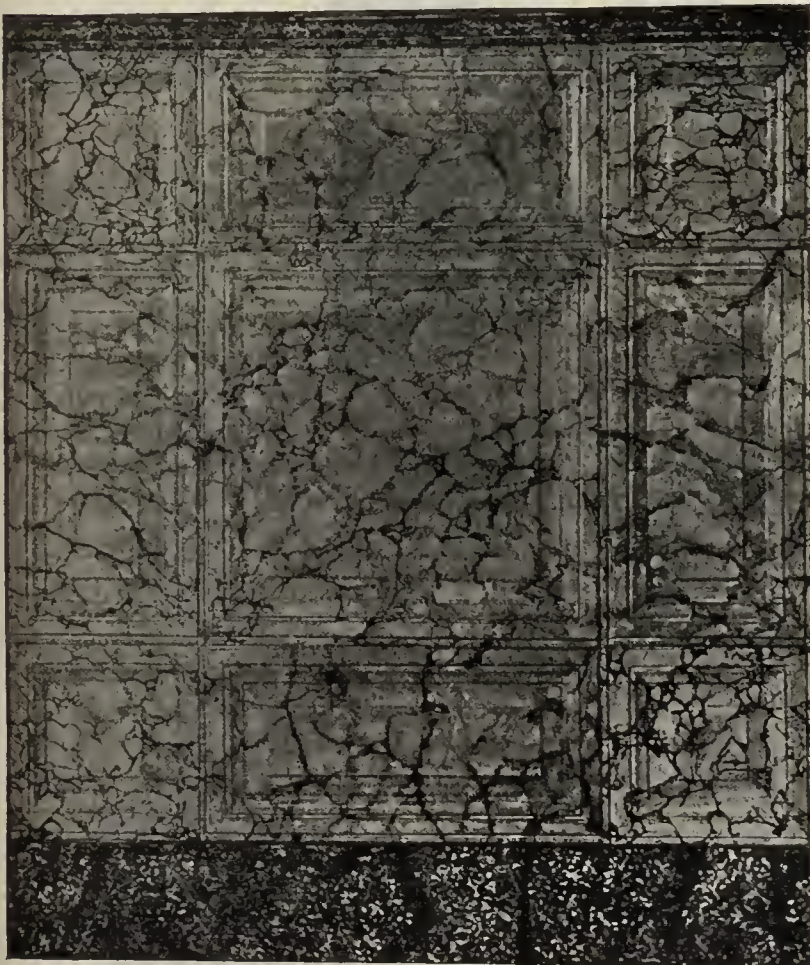
National Association of Master Composition Roofers.

The eleventh annual convention of the National Association of Master Composition Roofers, held at Providence, R. I., on July 16, was one of the best meetings of the body that has yet taken place. The sessions were presided over by the president, E. S. Bortel of Philadelphia, Pa., who, together with Secretary and Treasurer William K. Thomas of Chicago, presented the annual reports, which showed a flourishing condition of things in the trade. The principal subject of discussion was a recommendation contained in the secretary's report regarding the adoption of a label for materials of a uniform quality and a change in the constitution and by-laws of the association. It was voted that the association adopt a trade label which must be used upon materials of uniform grades. The details of this adoption of a trade label were left to the Executive Committee, with instructions to prepare such conditions as would meet with the approval of the national association.

The following officers were elected for the ensuing year: President, E. S. Bortel of Philadelphia; first vice-president, J. William Moore of Providence, R. I.; second vice-president, J. B. Oligschalger, Louisville, Ky.; secretary and treasurer, William K. Thomas of Chicago. Board of Directors: H. M. Reynolds, Grand Rapids, Mich.; W. B. Lupton, Pittsburgh, Pa.; C. B. Jameson, Buffalo, N. Y.

The next convention will be held in Louisville, Ky., some time in June of next year, the exact date to be selected by the secretary and treasurer and the second vice-president.

W. H. MULLINS of Salem, Ohio, who has made quite a reputation through his Sheet Metal Boats, is now manufacturing several classes of Row Boats in manganese bronze. It is stated that these Boats are being shipped to all parts of the world.



Sheet Metal Panels in Marble Finishes.—Fig. 1.—Wainscoting Finished in Imitation of Marble.

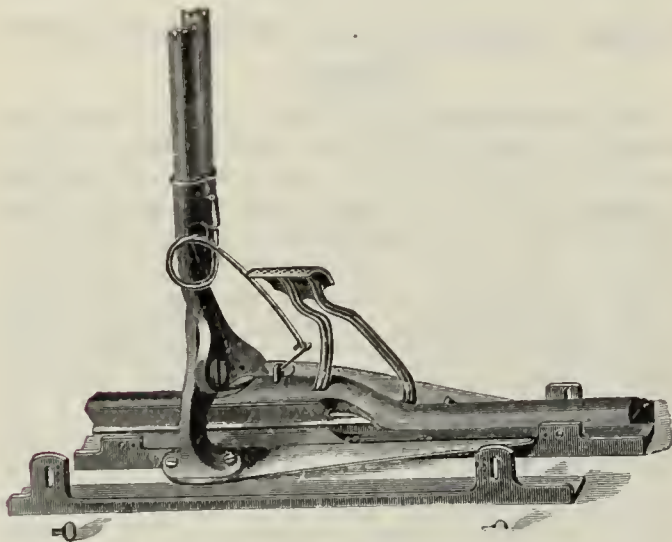
of the toughness and durability of the coating. The company also make panels in imitation of Sienna and Brocatel marbles, which are said to be absolutely natural imitations of the genuine stone. These marble finished patterns form very handsome wainscoting, walls and ceilings. The onyx ceilings are produced in panels with molding around the edge of each panel finished in a tint to correspond with the onyx and the relief work in the molding finished in gold, producing an exceedingly

The Sharon Tin Plate Mills.

A press dispatch states that the tin plate plant of the American Tin Plate Company, at Sharon, Pa., is to be removed to Columbus, Ohio. This is incorrect, for the reason that the American Tin Plate Company do not have a tin plate plant at Sharon, the mills at that place being owned by the Sharon Tin Plate Company, an affiliated interest of the Sharon Steel Company. We can state officially that the Sharon Tin Plate Company have no intention of removing their plant from Sharon to Columbus, or any other place. Ten mills have been in operation at these works for a long time, and ten more mills, which have been under construction for about a year, are nearly completed and will probably be started this month. The entire output of the Sharon Tin Plate Company is taken under a contract by the American Tin Plate Company at regular market prices, less a discount of 2 per cent. for cash.

Kenney's Patent Double Seamer.

The accompanying illustration shows a view of Kenney's patent double seamer for standing lock tin roofing, manufactured by the Dwight Slate Machine Company 512-516 Asylum street, Hartford, Conn. The machine consists of two clamps operated by long levers or handles. To one of these clamps is hinged a double, right angular faced folding bar operated by a foot lever. To work the machine the levers are opened, the clamps placed over the standing edge with the vertical face of the folding bar to the work and then closed and held firmly. By pressing down the foot lever the tin is turned a little below a right angle. The machine is then slipped along half its length and the operation repeated, the horizontal face of the folding bar completing $8\frac{1}{2}$ inches at each turn. Thus, two operations take place at each downward stroke of the foot lever. After going over the work once the gauges are raised and a second operation completes the double seam. It is pointed out by the manufacturers that the clamping arms take strong hold upon the work, preventing the machine from raising up



Kenney's Patent Double Seamer.

or drawing the tin, at the same time furnishing the workman with a direct hold upon the roof and a great degree of safety.

Where it is desired to double seam a roof of very steep pitch, the leverage is such as to enable the machine to be worked by hand. It will begin and finish a seam at either end of the roof, the operator standing in an erect position. These machines are adjustable to different widths of seam and qualities of tin. All parts are made to gauge, so that a duplicate part can be furnished at any time. The makers claim that this seamer will not break the tin, will make a more even and tight joint and save the labor of five or six men, as compared with the mallet system, while it is wholly within the range of a boy's work. The weight of the machine complete is 13 pounds.

On an order from the Freeman-Delamater Hardware Company, C. H. Bennett and J. H. Mayer of the firm

of Bennett & Mayer, 38 Congress street, West Detroit, Mich., performed the feat of making 800 joints of Stove Pipe in seven hours. A few figures will demonstrate the ground for claiming this as a feat. The time allotted to each Pipe was only $31\frac{1}{2}$ seconds, and each Pipe was put through five separate operations—namely, folding, forming, grooving, beading and crimping. This would allow but 6.3 seconds for each operation. The machines used were manufactured by the Niagara Machine & Tool Works of Buffalo, N. Y.

Canonsburg Steel & Iron Works.

The Canonsburg Steel & Iron Works, Canonsburg, Pa., have bought the property owned by the American Tin Plate Company at Canonsburg, Pa., and they propose to make additions and improvements to it which will necessitate a considerable outlay of money at once, but the works will be put in operation on or about the first of the year. The products will be fine steel and iron sheets for stamping and enameling purposes. The mill will be enlarged somewhat and the stamping works will be also equipped with new and modern machinery. The company have incorporated under the laws of Pennsylvania, with a capital stock of \$250,000. The officers are John F. Budke, president; John M. Watson, vice-president, and George Retberg, secretary. The report some time since that the plant had been dismantled is untrue.

The Centennial Rain Water Cut Off.

Cooney & Geiger, manufacturers of tinware, 19 and 21 East South street, Indianapolis, Ind., are now making their well-known Centennial rain water cut off out of galvanized iron to fit around corrugated pipe, as shown



The Centennial Rain Water Cut Off.

in the sectional view given herewith. This form of cut off is calculated to save time and labor, and it can be used with either vertical or horizontal pipe. This device is constructed of the best materials and is claimed to be unusually strong and durable. It can be used without extra pipe or elbows and is constructed with either right or left hand wire. The cut off is made in four sizes—2, 3, 4 and 5 inches in diameter.

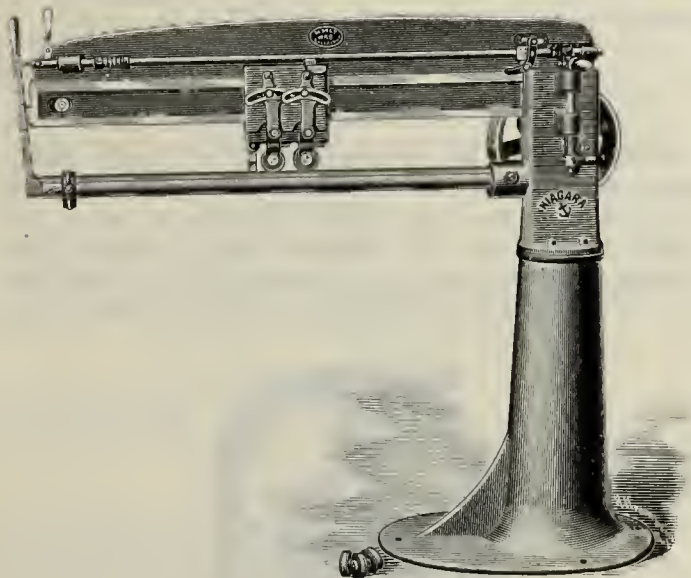
Peck, Stow & Wilcox Company.

The annual meeting of the Peck, Stow & Wilcox Company, manufacturers of tinsmith's and other tools and general hardware, took place at the company's office in Southington, Conn., last week. The regular 2 per cent. quarterly dividend was declared, and in addition a special 3 per cent. dividend was paid. The Board of Directors was elected as follows: W. R. Walkley, S. H. Wilcox and M. C. Ogden of New York; Marcellus B. Wilcox and Marcus H. Holcomb of Southington; Frank L. Wilcox of Berlin, Conn., and A. R. Treadway, L. H. Treadway and S. W. Sessions of Cleveland. The directors organized with the election of A. R. Treadway, president; Frank L. Wilcox, vice-president; Edwin N. Walkley, secretary, and Stephen H. Walkley, treasurer.

The company operate plants in Southington, Plantsville, Berlin and Cleveland. Recently the company have purchased and added to their Cleveland interests the Brittain & Mathew lock works of Pittsburgh. It is understood also that the company's Southington factory will be considerably expanded this year, and that new lines of manufacture will be added.

The Niagara Power Groover.

The Niagara power groover, shown in the accompanying illustration, is intended for grooving and closing the longitudinal seams in sheet metal cylinders, &c., made of iron up to No. 22 gauge. The traveling carriage has two rollers, one for grooving and the other for flattening the seam. The grooving horn is $2\frac{3}{4}$ inches in diameter and is reversible, so that either the flat surface or one of the grooves that are planed into the horn can be turned upward. Outside grooving is done in the usual manner by using the grooved wheel on the carriage and the seam is put toward the inside of the work by having flat rolls on the carriage, which press the seam into one of the grooves planed into the horn. The grooving and flattening rolls can be adjusted independently to suit the thickness of the material. A stop is provided at the outer end to prevent the work from slipping off the horn while being grooved. This stop is adjustable for work of various lengths. A guide is attached to the traveling carriage to hold the lock in posi-



The Niagara Power Groover.

tion laterally. The traveling head of the groover is moved by means of a sprocket chain.

It is pointed out by the manufacturers, the Niagara Machine & Tool Works, Buffalo, N. Y., that the movable rack used on some power groovers is objectionable, as it necessitates a floor space of twice the working length of the machine. By closing the latch that connects the grooving horn with the upper bar, the operator starts the traveling carriage, which will pass over the work, return to its original position and then stop automatically. The operator can stop the motion of the traveling carriage during the forward movement at any point by means of a hand lever. The traveling carriage opens the end latch before starting on the return trip, during which time the rolls clear the material to give the operator a chance to remove the finished work and to get the next piece ready. Three grooved rolls, 5-16, 7-16 and 9-16 inch respectively, and two flattening rolls are supplied with each machine.

New Black Plate Process.

For some time the American Tin Plate Company have had under construction at their Monongahela Works, South Side, Pittsburgh, some machinery for the rolling of black plate under an entirely new process. The details of this process have not been made public, but it is said that if it proves to be as successful as anticipated it will completely revolutionize present methods of manufacture of tin plate, particularly as regards the black plate rolling. Under the present Amalgamated scale the cost of rolling black plate is about \$12 a ton, and it is the aim of this new process to very considerably reduce this admittedly excessive cost. The new machinery is expected to be finished in September, when the rolling of black plate will be commenced. If the

process is successful it is the intention of the American Tin Plate Company to equip their principal plants with the improved machinery.

THE TIN PLATE VOTE.

Although voting is still going on among the lodges of the Amalgamated Association of Iron, Steel and Tin Workers on the question of accepting the reduction in wages to permit the American Tin Plate Company to secure the business of the Standard Oil Company, the reports already published make it practically certain that the proposal will be rejected by a large majority of the members of the association. It is claimed that a majority of the workmen in the State of Ohio are in favor of accepting the reduction, but those at New Castle, Pa., and Elwood, Ind., are said to be practically a unit in opposition to the reduction. President Theodore A. Shaffer has been visiting all the principal plants of the American Tin Plate Company and urging the men to accept the proposed cut, which he believes will accrue to their benefit in the end. In the proposition, as laid before the workmen, it is explained that in order to secure the trade now going abroad, amounting to about 1,500,000 boxes annually, a wage reduction of 25 per cent. would be necessary on all plates rolled to replace drawback plates. The general wage reduction, however, would not be more than $3\frac{1}{2}$ per cent., and as the production would be increased fully $16\frac{1}{2}$ per cent., the average earnings of the workers would be increased about $12\frac{1}{2}$ per cent.

It is said that the fact that the securing of the business of the Standard Oil Company and some of the large packers, which now goes to South Wales, would take away their employment from many of the Welsh workmen, has induced numbers of the Welsh tin plate workers in this country to vote against accepting the offer. However that may be, it appears to be pretty clear that the proposed wage reduction, in its present form, at least, will be rejected by the Amalgamated Association as a body. Should they not be able to secure this foreign business the American Tin Plate Company, having accumulated considerable stocks at their mills, will undoubtedly be forced to close down a number of their plants. Already this closing down has begun. The largest of the company's plants, the Shenango works at New Castle, Pa., has been shut down indefinitely; also the two plants at New Kensington, Pa., and several in Indiana. All the nonunion plants of the company are said to be in full operation.

FLASHINGS.

THE BUFFALO FORGE COMPANY, Buffalo, N. Y., advise us that the demand for their Buffalo Improved Ventilators has been so great that the supply of their previous catalogue relating to this device has been exhausted, and they have been compelled to get out a new one. The new issue, just received, is in the form of a neat booklet of 16 pages, bound in a cover of attractive design. The typical features of the Buffalo Improved Ventilators are dwelt upon in the introduction, and details are presented describing the principle upon which they are constructed. Half-tone cuts show various forms of these Ventilators adapted for different requirements, some with glass tops and others without illumination. Cuts are also given showing the method of fastening the ventilators to the roof. The last few pages of the catalogue contain illustrations of the company's Disk Ventilating Wheels, Buffalo Blowers and Exhausters and Stationary and Portable Forges.

THEODORE OLIVER, Easton, Pa., has sold his Sheet Iron plant to the Jackson Foundry Company of Philadelphia. The plant consists of a double puddling furnace and a train of 22-inch Sheet mills. It is understood that the plant will be placed in operation shortly.

THE capital stock of the Pope Tin Plate Company of Pittsburgh, with Tin Plate mill at Steubenville, Ohio, has been increased \$500,000 to \$750,000. It is expected that their entire works will be completed and in full operation within 60 days.

RICHARD GARLICK has been made auditor of the Youngstown Iron Sheet & Tube Company, Youngstown, Ohio, succeeding W. C. Reilly, recently appointed general superintendent. Mr. Garlick is also treasurer of the concern.

WE are advised that no improvements are under contemplation at the present time at the Falcon Works of the American Sheet Steel Company, Niles, Ohio. This plant is now idle, with no prospects of early resumption.

BERTSCH & Co., Cambridge City, Ind., manufacturers of Shears, Punches and Bending Rolls, report business the best in the history of the firm, with enough orders ahead to keep them running for several months. They have just shipped a 102-inch improved Hydraulic Plate Shears weighing 50 tons, for 1¼-inch Plates, to the Lukens Iron & Steel Company, Coatesville, Pa.

THE GLOBE MACHINE & STAMPING COMPANY, 970-972 Hamilton street, Cleveland, Ohio, have during the past month increased their capacity considerably by the installation of a number of new tools. They report on hand as many orders as they can take care of, among which are a number for drop forging dies and punching and forming dies for Sheet Metal work. Fred. G. Nicalous, formerly with the Browning Engineering Company, and later with the National Stove & Illuminating Company, has interested himself with the Globe Machine & Stamping Company and is now their superintendent.

THE new Tube, Skelp and Sheet mills of the Sharon Steel Company at Sharon, Pa., are being erected as fast as possible, but will not be in operation before about December 1. The Sheet mill will have an annual output of about 35,000 tons and will contain ten mills, ten Sheet furnaces, ten pair furnaces and four annealing furnaces. There will also be a galvanizing plant connected with the Sheet mill.

THE FULMER WIRE SNOW GUARD is a new device manufactured and patented by J. H. Fulmer, Nazareth, Pa. The special feature of the Guard is that it is made of double strength where the greatest strain comes. It is claimed that it will not break the slate. Mr. Fulmer is also the manufacturer of a line of Slater's Tools.

MEURER BROTHERS, Brooklyn, N. Y., are calling special attention to their leading brands of guaranteed Roofing Tin, which have obtained a wide reputation for the firm. These include Meurer's Genuine Tinned Iron Charcoal Sheets, made in the style used half a century ago, Meurer's Old Method, Meurer's Roofing, Flushing and Pullman.

THE STARK ROLLING MILL COMPANY, Canton, Ohio, announce that their plant is now in full operation. The company make a specialty of Galvanized Sheets and Fine Steel Sheets for stamping and electric work.

THE FALKENAU-SINCLAIR MACHINE COMPANY of Philadelphia have been formed by the consolidation of the Philadelphia Machine Tool Company and A. Falkenau of that city, the plant of the first named company being removed to 109 to 115 North Twenty-second street. The new company have taken over the entire plant and business of both of the above named concerns, and the largely increased facilities secured will enable them to give prompter service and at the same time maintain the reputation for workmanship in their Machine Tools they have hitherto enjoyed. The company, among other products, manufacture Presses and Shears, Curved Molding Machines, Cornice Presses, &c.

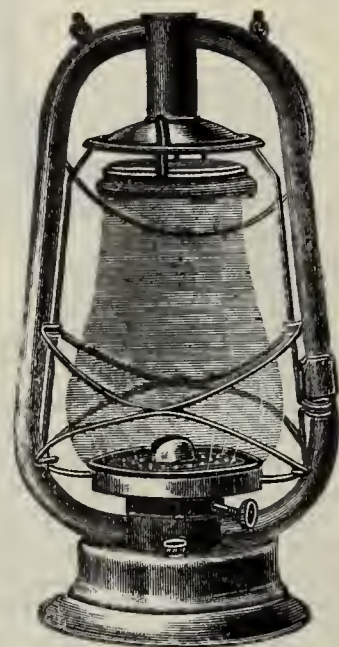
STEARNS HARDWARE COMPANY, Port Arthur, Texas, have been incorporated with a capital stock of \$25,000 to carry on the wholesale and retail business in Stoves, Tinware, Shelf and Heavy Hardware. The officers of the company are Geo. R. Stearns, president; S. R. Hogaboom, vice-president and general manager; J. C. Reynolds, secretary, and Chas. F. Ashley, treasurer.

Death of Christian Off.

Christian Off, senior member of the firm of Christian Off & Co., tanners and galvanized iron workers, 434 East Washington street, Indianapolis, Ind., died of apoplexy on July 25, at his home, 535 North Noble street, Indianapolis. Mr. Off was a well-known and highly respected citizen of Indianapolis and his firm was one of the pioneer business houses of that city. He was born in Wurtemberg, Germany, in 1835, and came to this country at the age of 17 years. In 1854 he went to Indianapolis and occupied himself in various business lines, subsequently organizing the Capital City Planing Mill. Leaving the lumber business Mr. Off opened up a stove store and then branched out in the tinware and tinsmithing business. In the last few years the attention of the concern was devoted more to the tin and galvanized iron trade. Mr. Off leaves a widow and seven children, his eldest son, William F. Off, being the surviving member of his business firm. The deceased was prominently identified with many of the German societies of the city and had served several years as a member of the City Council.

The Liberty Lantern.

William Vogel & Brothers, 37 to 47 South Ninth street, Brooklyn, N. Y., are manufacturing and placing on the market the new Liberty lantern, of which we give an illustration. The points of merit claimed by the makers for this lantern are the easy lift and the fact that the combustion is perfect, while the light is un-



The Liberty Lantern.

usually strong and steady and cannot be blown out or extinguished by shaking or jarring. The lift, which is a special device of these manufacturers, has a positive lock on both top and bottom and is very simple in operation. The lantern is of the best possible materials and workmanship and is claimed by the makers to be the acme of excellence in its field.

UNION HARDWARE COMPANY, Arkansas City, Kan., have changed their style to the Hamilton Hardware Company and increased their capital stock from \$5000 to \$10,000. The company are retailers of Stoves, Shelf and Heavy Hardware and Tinware. There is also a department devoted to plumbing.

N. W. DEERING & Son have succeeded G. H. Thornley in the Stove, Hardware and Tinware business in Atlantic, Iowa. Mr. Deering was identified with the Hardware business in Iowa 20 years ago, but went to Florida in 1888, opening a store in Quincy of that State. This business was disposed of to Trulack Bros. in the early part of the present year.

THE EASTERN TRADE GOLF ASSOCIATION.

A commendable effort is being made to cultivate cordial relations among men who are engaged in the plumbing and heating goods trade by the organization of a Trade Golf Association in the East, where the members can meet under relaxation from business cares, the social side be developed and acquaintances formed that cannot but have a beneficial effect among tradesmen. The following letter sent out from the headquarters of the association, at 1123 Broadway, New York City, by the secretary, H. A. Smith, gives the result of the first meeting and notice of the date of the next meeting will be given in due season when finally determined:

Last year a Trade Golf Association was formed in the West, which has been most successful. Several tournaments have been held at which creditable prizes were offered for competition, and much good playing and good fellowship have resulted. The membership is confined to firms manufacturing and jobbing plumbing and heating goods.

A number of Eastern supply men having attended the Western meetings, and others having heard about them, it has been under consideration for some time to form a similar association in the East. This was done August 1, the meeting being held at "The Arena," Thirty-first street and Broadway, New York. An organization was formed as follows:

OFFICERS:

President, Chas. H. Simmons, John Simmons Company, New York.
Vice-president, C. W. Woodward, secretary Association of Manufacturers and Jobbers of Plumbing Supplies, New York.
Treasurer, Frank C. McLain, New York.
Secretary, H. A. Smith, *Engineering Review*, New York.

BOARD OF GOVERNORS:

P. R. Jennings, Bruce & Cook, New York.
Henry Aird, Aird-Don Company, Troy, N. Y.
W. H. Thayer, Smith & Thayer Company, Boston.
E. C. Molby, Pierce, Butler & Pierce Mfg. Company, New York.

MEMBERS:

A. Fowle, Jr., Central Foundry Company, New York.
F. C. Jennings, Bruce & Cook, New York.
H. E. Adams, Adams & Jones Company, Boston.
T. G. Haywood, the Richmond Company, Norwich, Conn.
F. T. Bassett, American Radiator Company, Boston.
H. Hovey, Prizer-Painter Stove & Heater Company, Reading, Pa.
F. W. Smith, U. S. Radiator Company, Dunkirk, N. Y.
H. S. Martin, U. S. Radiator Company, Dunkirk, N. Y.
W. S. Appleton, U. S. Radiator Company, New York.
W. L. Herendeen, Herendeen Mfg. Company, Geneva, N. Y.
R. D. Reed, H. B. Smith Company, Westfield, Mass.
J. F. Kernan, Syracuse Stove Works, New York.
J. C. Faulkner, H. B. Smith Company, New York.
F. C. Sullivan, Henry Huber Company, New York.
F. C. Barrett, Pierce, Butler & Pierce Mfg. Company, New York.
Frank K. Chew, *The Metal Worker*, New York.

The office of Captain was left vacant, also three places on the Board of Governors. These will be filled at the next meeting, which will probably be held at "The Arena" on August 15. The initiation is \$2, annual dues \$1; all payable in advance.

It is intended to hold the first tournament September 9, the day preceding the fall meeting of the Association of Manufacturers and Jobbers of Plumbing Supplies, on grounds to be selected by the Board of Governors. The prizes will be announced later.

I inclose herewith membership blank and hope to receive your application by early mail. The experience in the West has shown that such an organization conduces to social enjoyment, healthful recreation and valuable business acquaintance.

Gas Governors.

An appliance that should appear in every acetylene plant of fair size, says the *Plumber and Decorator* of London, is a governor. It is a source of economy even with coal-gas, which is served from a company's mains and already "governed" at the works. With an acetylene plant the gas works is at home, and to have no pressure-governing appliance or means of automatic control between the gas works and the burners is wrong. It is probable that the governor has been omitted even more than the purifier, and, in consequence, there have been annoying results, waste and other things tending to the condemnation of acetylene. A generator for general purposes usually stores the gas in the holder at about 6 to 10 inches pressure of water. The holder-bell, if of stout metal, will cause an 8 to 10 inch pressure unless it is counterbalanced, and this latter is unnecessary if the bell is not loaded in any way. The pressure at the

burners, for the best flame and economical results, varies from 2 to 4 inches (for 20 to 50 candlepower burners), and to have an 8-inch pressure behind a 20 candlepower burner means a waste of gas unless the bracket tap is carefully adjusted. As servants never do adjust gas taps carefully the waste is certain to occur. A governor obviates this, as it governs the pressure to whatever it is set to do, and this pressure will be at every burner, whether one or many be open, and will not vary. The governor should be considered essential.

BOILERS AND RADIATORS.

This branch of trade, both wholesale and retail, is to be congratulated on the business of the year, as shown by the universally favorable reports from all sections. July is said to have shown a larger volume of trade, so far as the sale of boilers is concerned, than has ever before been done in that month, starting the second half of the year on the same basis that the first half has maintained. A most pleasant feature of the boiler trade so far this year is the preponderance of orders for the larger sizes and better class of boilers. This indicates satisfactory heating systems and economical fuel consumption. It also reflects a wise selling canvass by those who direct this work and is evidence of consideration by architects, builders and others of the sound, sensible information to the effect that an ample boiler capacity is a good investment in a heating plant. The sale of the smaller and less economical boilers is a menace to the best interests of the trade. It not only prevents the sale of more profitable goods, but the use of apparatus that must be run hard to do its work not only is extravagant in the use of fuel but also brings adverse criticism upon the whole boiler trade. Consequently it is pleasing to note in the extended sale of the larger and better boilers a movement in the right direction that cannot but bring increased prestige to this method of heating.

The increased sales also reflect the alertness of the buyers to the conditions which have previously been clearly outlined in *The Metal Worker* and which have led to the wise conclusion that an early advance in prices was naturally to be expected. The continuance of the conditions prevailing in the prices of pig iron, labor and supplies, with no indication of softening, has had the expected effect on the excellent policy that has been maintained for several months by the manufacturers. The effort to agree upon a price at the first of the year and maintain it through the year has not been without its benefits, even though a change has been made necessary by uncontrollable conditions. Most of the estimates made by steam fitters early in the year have been accepted and the necessary orders placed so that the steam fitter is protected while those who have bids out should withdraw them at once or give a notice of an advance sufficient to cover the advance in the price of the boilers that was found necessary by the manufacturers at a meeting held during the week. This advance was thoroughly discussed and the cost of production, which is the only sound basis on which to fix a selling price, justifies the increase that was finally agreed upon, although it was about half of what was desired by some. As the probability of this advance was so generally understood it was practically discounted by the contractors and will cause no hardship to those who used ordinary foresight.

Although no advance is reported in the price of radiation, it is difficult, in view of the prevailing cost conditions, to see how manufacturers can continue to maintain the old prices in this line of their product, valuable as the policy so tenaciously held to in the interest of the trade, of maintaining a stable market, may seem to be.

THE BARSTOW STOVE COMPANY, Boston, Mass., are calling the attention of the trade to their Bay State Hot Water Heaters, a novel form of Heater made especially for use in Bay State Furnaces when it is desired to heat additional rooms by hot water. These Heaters can also be fitted into any other Furnace having a fire chamber of proper size. They are made in four sizes of capacities ranging from 125 feet to 550 feet.

THE VACUUM SYSTEM OF STEAM HEATING.

While the advantages of a vacuum in radiators for assistance in distributing steam through a steam heating system have been recognized for many years, it was only recently that any effort was made to adapt these advantages to steam heating apparatus of all kinds. It is claimed that the trade generally have thoroughly mastered the installation of successfully working one and two pipe steam heating systems, and the progressive members of the trade are now making a study of the merits of the various exhaust, vapor and vacuum systems of steam heating. Those who are not near the large centers, however, do not have the same opportunity for securing information possessed by their more fortunately located competitors, and they, as well as many others, will be interested in the accompanying illustration of the apparatus used by the James A. Trane Vacuum Company of 40 Dearborn street, Chicago, which has recently been exhibited, in the interests of the manufacturers, at the showrooms of the Judson A. Goodrich Company, 105 Beekman street, New York City, by E. P. Allen of the Norwall Mfg. Company of Chicago.

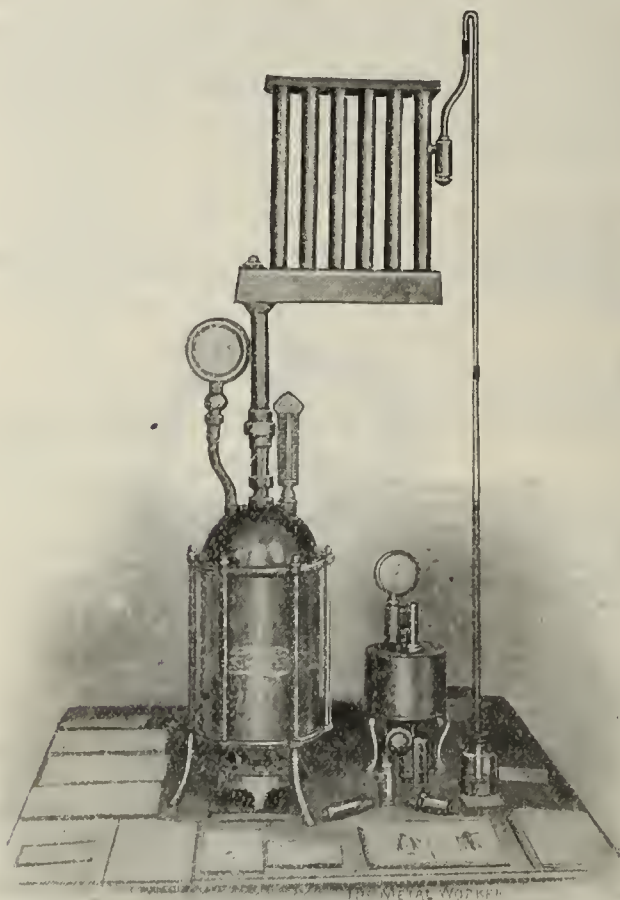
In order that the principle and operation of the vacuum system may be seen and understood, the boiler, radiator, the Norwall air valve and the Trane mercury seal have been connected so as to work under exactly the same conditions as obtain in a regular steam heating plant. The boiler consists of a glass cylinder and two dome shaped heads of brass, brass connecting rods being used for securing the heads to the glass cylinder, and tight joints being made by means of packing. The bottom dome affords what might be termed a combustion chamber, into which the flame from the gas burner located beneath it plays as against a crown sheet and the heating surface of a boiler. The glass cylinder enables the water line and the movement of the boiling water to be readily seen. From the top dome a steam main on the one-pipe principle is carried to a radiator made of sheet brass. Connected with the dome of the boiler is a thermometer, which shows the temperature of the vapor arising from the boiling water. A compound pressure and vacuum gauge is also attached. At the last column of the radiator a Norwall automatic float air valve is placed, a pipe being carried up from it and connected with a glass tube, which extends down into a bottle of mercury, representing the Trane mercury seal, resting on the table beside the boiler.

On lighting the gas in the burner the water in the boiler soon begins to boil, and as a pressure of steam is generated the air is expelled from the radiator ahead of the steam, until the steam reaches the air valve, which at once closes and prevents the escape of steam, in exactly the same way as the air is expelled from the heating system in a building. The air which has passed from the radiator and through the air valve goes down the glass tube and bubbles out through the mercury in the bottle, or, in a working system, in the Trane mercury seal, a patented device specially constructed for the purpose. The advantage of a vacuum steam heating system can now be seen, for when the gas burner is removed or turned down to a low flame the water, being subject to a vacuum through the condensation of the steam in the radiator, continues to boil. As the temperature of the water decreases the tendency toward a vacuum increases and the mercury rises from the bottle, or from the Trane mercury seal, up into the glass tube or air pipe, so that it is not uncommon for working systems to carry a vacuum of 20 inches when the water in the boiler is boiling, although the temperature is but slightly above 160 degrees.

From this it will be readily seen that a heating system in a building equipped with a practical working vacuum system has very much the same range of temperature in the radiator that is available in a hot water heating system. The claim is made that vacuum heating plants have been working with the water in the boiler at as low a temperature as 120 degrees, and no difficulty is experienced in operating plants under a temperature of less than 150 degrees. This demon-

strates that instead of burning the fuel that would be necessary to keep the water at 212 degrees, or above, and generating steam under slight pressure, very much less coal is needed to keep the water in the boiler at any temperature—180, 160 or 140 degrees—below this point, bringing in the large saving in fuel that the advocates of the vacuum system of steam heating claim for their apparatus.

The Trane vacuum seal can be applied to every individual radiator on a heating system, or the air pipes from all the radiators can be connected into one pipe leading into a Trane mercury seal, located advantageously for the purpose. After all the air in the system has been expelled through the air valves and has bubbled out through the mercury seal the tendency toward a vacuum will lift the mercury in the air pipe and prevent the entrance of air. The height of the mercury column and the amount of the vacuum are governed entirely by the firing of the boiler. A low fire gives a high vacuum and low temperature of water, which is



The Vacuum System of Steam Heating.

well adapted for the heating of buildings in the early fall and late spring, while during the winter season the higher firing will reduce the vacuum and increase the temperature of the water until steam is generated under a pressure, as is customary with low pressure steam heating plants, with the attendant higher temperature of the steam in the radiators.

The picture shows the little model working under a vacuum of 17 inches, with the mercury in the thermometer indicating a temperature of about 170 degrees. The height of the mercury in the glass tube corresponds in inches on a 2-foot rule with the indication on the vacuum gauge, although the temperature, as registered by the thermometer, varies, owing to the fact that the bulb of the thermometer does not extend down into the water, which accounts for the discrepancy between the actual temperature registered and what it would be if the conditions were perfect.

One of the features essential to the success of a vacuum system is a good air valve. Between the glass boiler and the mercury seal on the table a little nickel plated boiler is shown, operated by an alcohol lamp, to which is attached a pressure gauge and a pipe connected with a Norwall valve. The sensitiveness of this valve and the quickness of its operation are shown after steam is gotten up in the little boiler, by touching the

surface of the valve with a cold wet towel, when the valve will immediately open and allow the steam to escape.

On the table below this boiler is a little glass tube, open at the top, connected by means of a slender pipe with the glass globe. In the glass tube is a float similar to that used in an actual valve. This little device is used to demonstrate the action of the air valve. After partially filling the tube with water the float is dropped into it. This has the effect of compressing the air in the ball. By holding a lighted match on the outside of the glass ball the air in it will expand and a large portion of it will be expelled through the water. The air in expanding will force the water to rise in the tube and carry the float up with it. As long as heat is applied to the glass globe the float will continue at a high point, exactly the same as steam from a radiator entering the upper portion of the Norwall air valve forces the water to enter the interior chamber of the valve and raises the float so as to bring the valve point to its seat and prevent the further escape of steam or the entrance of air. Just as soon as a wet towel or other cool substance is applied to the glass globe the air in it will contract and allow the water to flow down in the tube and rise in the ball to fill the place that has been occupied by the expanded air. As the water falls in the outer tube the float drops in the valve under the same conditions and opens the valve for the entrance of air.

The simplicity of the operation of these devices assures their successful operation, provided the workmanship and material used in the construction of the various details of the apparatus are of a high grade, and these, both the James A. Trane Vacuum Heating Company and the Norwall Mfg. Company claim, are being maintained at the highest possible grade, to insure the satisfaction of their devices, as they depend on satisfactory operation to establish their popularity and create a demand. Catalogues giving full particulars of the devices can be secured by correspondence with either of these companies at 40 Dearborn street, Chicago. The model shown in our illustration was on exhibition at the office of the Judson A. Goodrich Company from July 22 to 28, and was examined by many of the leading men in the heating trade in New York and vicinity.

Where Buffalo Fans and Engines Go.

The products of the Buffalo Forge Company of Buffalo, N. Y., are in steady demand, not only throughout the United States, but also in European countries. The company gives the following list of a few of the orders recently received through their different branch houses, which give some idea of where their goods go:

Two 70-inch steel plate steam fans, for heating and ventilating, direct connected to two Buffalo Forge Company engines, and one 130-inch $\frac{3}{4}$ housing standard steel plate pulley fan for mechanical draft, are to be shipped to Copenhagen, Denmark; one induced draft plant and one 23 horse-power engine for an electric light plant in Dutch Gulana, South America; five Buffalo engines of 45 horse-power each for driving generators, and one 38 horse-power engine for a pumping equipment to be installed in a sugar factory now being built near Manzanillo, Cuba; a 20 horse-power Buffalo vertical class "A" engine, to be shipped to Gustemunde, Germany; a 60-inch standard steel plate fan for ventilation, to be shipped near Glasgow, Scotland; a 140-inch steel plate fan with heaters complete for heating and ventilation, to Barrow-in-Furness, England; one standard 80-inch fan and heater complete, one 90-inch pulley fan for ventilation, and one 30 horse-power horizontal Buffalo engine, to London, England; one 120-inch fan and six 60-inch fans, to Manchester, England; an 80-inch standard steel plate fan for mechanical draft, to Victoria, British Columbia; a 110-inch steel plate pulley fan direct connected to a cylinder above shaft Buffalo engine for mechanical draft, to Halifax, Nova Scotia; one 70-inch fan and one 100-inch fan for heating and ventilating purposes, to Portland, Ore.; a standard 40-inch steel plate fan, to College Station, Texas; a 100-inch steel plate fan direct connected to a Buffalo single vertical

engine, to San Francisco, Cal.; two special 60-inch steel plate fans, to New Orleans, La., and a 25 horse-power horizontal Buffalo engine, to Gretna, La.

ANNUAL MEETING OF THE INTERNATIONAL ACETYLENE ASSOCIATION.

The announcement is made that the annual meeting of the International Acetylene Association will be held in the assembly room of the John Crerar Library, Washington street and Wabash avenue, Chicago, on August 11, 12 and 13. The meeting will be largely devoted to the reading and discussion of papers by members. Among the subjects to be treated are the following:

"Foreign Acetylene Associations and Their Work," by Elias A. Long.

"Acetylene Progress on the Pacific Coast," by Percy W. Rochester, San Francisco.

"Town Lighting from Automatic Generators," by W. W. Turner.

"A Review of the Burner Situation," by J. B. Carroll, Chicago; M. Kirchberger, New York; H. B. Shafer, Rochester, N. Y., and R. B. Stewart, Chattanooga.

"Acetylene Wrinkles," by C. E. Ummach.

"Car Lighting from Independent Acetylene Generators," by E. P. Caldwell.

"Acetylene Possibilities at the Louisiana Purchase Exposition," by A. E. Schlieder, Omaha, Neb.

"Recent Developments in the Use of Acetylene Under Pressure," by J. M. Morehead.

"Insurance as Related to the Acetylene Generator Manufacturer," by L. J. Wing, New York.

Question Box, in charge of W. H. Drake, Cleveland.

Purification and Its Real Value.

Meters and Their Use to Promote Business.

Special applications of Acetylene.

Lighting Country Homes.

The demand for all the conveniences of the larger cities in the residences of those who live in the suburbs has led to the production of special apparatus to meet these requirements. Not the least important among these requirements is that for a lighting system. The Gilbert & Barker Mfg. Company of Springfield, Mass., and 82 John street, New York, have issued a 106-page work entitled "How Best to Heat Our Country Homes and Resorts," devoted to the Springfield gas machine. This machine consists of a gas generator and cylinder containing evaporating pans and an automatic air forcing apparatus. The generator may be placed in a cellar or in the ground, and when filled with gasoline it is only necessary to operate the air pump to facilitate the generation of gas and cause its distribution through the piping to the burners providing the light. The gas generated by this process is also adapted for cooking and heating apparatus. The catalogue is illustrated with broken views showing the apparatus in detail and its application in use. Sectional views are also given illustrating the construction and internal arrangement of the various appliances. More than 70 pages are devoted to half-tone engravings of colleges, halls, churches, hotels and large country houses that are lighted by the Springfield gas machines. These are accompanied by testimonial letters from those who have used them in all sections of the country.

WILLIAM MALLIN, a colored plumber, with a shop in Marletta, Pa., is with the State troops at Shenandoah, Pa., as brigade headquarters' man to General Gobin. His genial and jolly ways have made him many friends among those whose business takes them to the headquarters. He has served in the Pennsylvania Guard for five years as brigade headquarters' man. During the Spanish War he was regimental headquarters' man for Col. D. D. Case of the Fourth Pennsylvania, seeing service in Porto Rico, and was afterward assigned to the Twenty-ninth Georgia at Fort McPherson. Mallin claims to have contracts for plumbing eight houses in his town and says that he gets most of his work from the white population.

PIPING MATERIALS FOR STEAM PLANTS.*

IN TWO PARTS. PART I.

Designing a system of steam piping is properly the province of the professional mechanical engineer. The manufacturer is interested in the design only so far as it may adversely affect his product. He has, however, a vital interest in the quality and type of the materials specified, as in the event of failure of any part of the system he usually bears the lion's share of the blame.

It is obvious that the manufacturer of any article whatever should have a knowledge of service conditions if he is to attempt to fulfill such conditions satisfactorily. Having such knowledge, it becomes necessary, when designing valves, fittings or other steam appliances, to draw upon the usual sources of engineering information as to strength of material, &c., supplementing this by a broad series of shop tests to determine whether the theoretical information is borne out by facts. It is one thing to think you are right and quite another to know you are right because you have demonstrated it.

The Crane Company have carried on a series of such tests for several years, principally covering the field of high pressure steam piping, and as briefly as possible I will give you the results:

PIPE.

Ordinary commercial pipe, 12 inches and smaller, appears to have an ultimate bursting strength in excess of 1500 pounds per square inch, provided the weld is perfect. We have tested some lengths of 10-inch pipe taken at random out of stock to 2300 pounds per square inch, 8-inch to 2000 pounds, 12-inch to 1500 pounds, 16-inch $\frac{3}{8}$ inch thick to 800 pounds, 24-inch $\frac{3}{8}$ inch thick to 600 pounds, all without rupture or apparent distortion. We have tested from time to time thousands of pieces of all sizes, 20 inches and smaller, under 800 pounds per square inch, so that as far as strength is concerned, there appears to be no reason why pipe heavier than standard should be used on power plant work. In plants where the feed water is bad, it is economy to run the feed lines of extra strong pipe, and this has become quite a common practice even where the water is comparatively good.

FLANGED JOINTS.

We have had occasion to make nearly every possible style of joint, but the major portion of our orders are for either screwed or shrunk flanges, in the proportion of about 85 per cent. screwed to 15 per cent. shrunk. Considering everything—first cost, ease with which a line can be altered or repaired, freedom from troublesome leaks and strength against tensile strain—we think a good screwed joint is superior to any other. We use two lengths of threads, the standard up to 125 pounds and a somewhat longer full taper thread for pressures up to 250 pounds. They compare as follows:

	Standard. Inches.	Extra heavy. Inches.
4-inch length.....	1 3-16	1 $\frac{3}{4}$
6-inch ".....	1 7-16	2
8-inch ".....	1 $\frac{1}{2}$	2 1-16
12-inch ".....	2 1-16	2 9-16
16-inch ".....	2 7-16	2 $\frac{3}{4}$
20-inch ".....	2 $\frac{3}{4}$	3 $\frac{1}{4}$

To determine the holding power of threads we made a large number of test, commencing with the long threads and gradually cutting them away. Results showed that the strength of the joint was limited by the strength of the cast iron flange. In no case was the thread stripped. On a 10-inch pipe the threads were reduced until barely five threads were in contact instead of 14, as called for by our standard tables. On the test the flanges broke at 650 pounds per square inch, all threads being intact. This question of the holding power of threads is one that we frequently have to explain, as some people are under the impression that under high pressure the threads are likely to strip. A calculation of the amount of metal which would have to be sheared off before the joint parted will effectually still any fears in this direction. Taking, for example, our

standard length of thread, eight threads per inch, the result works out as follows:

Size.	Length of threads. Inches.	Metal in contact. Square inches.	Sectional area of full weight pipe. Square inches.
8 inches.....	1 $\frac{1}{2}$	42	8.396
12 inches.....	2 1-16	77	14.579
16 $\frac{3}{8}$ inches.....	2 7-16	116	18.41

If we assume that the shearing strength is one-half of the tensile, then it is evident that the holding power of the threads is fully three times greater than the ultimate strength of the pipe. R. T. Crane had a great number of tests made upon runs of 8-inch pipe, using regular wrought iron couplings, for the purpose of demonstrating that long threads were not essential to strength. The final test was made with threads only $\frac{3}{4}$ inch long, barely six threads being in contact. The pipe was tested to 1000 pounds per square inch, the pressure being held on the line for a day. If one did not stop to consider the subject carefully it would certainly look extremely dangerous to carry 1000 pounds on a line with only half the usual number of threads, but as a matter of fact there were about 20 square inches of metal in the threads, against 8.396 in the pipe, and the joints were strong enough to carry the line to the limit of its bursting strength.

The object in making threaded joints for high pressure work longer than standard is not to gain greater tensile strength, but to reinforce the pipe by a deep hub and by throwing a large number of threads into contact to guard against the flanges being loosened by the continual vibrations of a high pressure line.

PIPE SHOULD BE SCREWED THROUGH THE FLANGE.

It is important to have the pipe screwed completely through the flange, first to guard against the vibration, and second to make a bearing for the gasket upon the end of the pipe and close the thread against the oxidizing action of the steam.

It is our practice to screw the flange on with power, until the ends of the pipe project about 1-16 inch. The piece of pipe is then swung in a special lathe and the projecting ends cut off, a light cut being then taken on the face of each flange to insure them being parallel and at right angles to the true longitudinal axis of the pipe. This refacing operation is absolutely essential to a first-class job. Pipe is rarely perfectly straight, and, even if it were, there is the chance of the thread on the pipe, or in the flange, being cut on a slight angle, which in a long run might throw the line out considerably, or in a run with a number of joints the multiplication of a very small error in each one will aggregate a large one. Each pipe should drop into place naturally without undue strain upon the flanges, and this can only be accomplished by the refacing method.

The shrunk joint is made in the following manner: The pipe is rounded up and calipered. The flange is then bored out to a shrinking fit, and, after being brought to a red heat, is slipped over the pipe and the end of the pipe peined over. The flanges are then turned up in a lathe, as before described. It is claimed for this joint that the full thickness of the pipe is carried through to the face, and consequently it will stand more pressure and have a longer life than the screwed joint. The experiments we have made do not bear out this view. It is certain that against tensile strain the screwed joint will hold all the pressure that can be put on it; in fact, with end and blind flanges sufficiently strong a pipe may be burst under pressure without injuring the threads, while against lateral strain, expansion or vibration a screwed joint properly made is, if anything, better. The chief objection to a shrunk joint is its high cost and the fact that a gasket must cover the end of pipe in order to make a tight joint. There are very few joints of this kind, whether they are shrunk on hot or peined on cold, which will not leak if the end of the pipe is exposed.

Cast iron flanges riveted on are very undesirable, as they almost invariably leak through the rivet holes when subjected to the vibration of a steam line in active service.

PACING FLANGES.

We are called upon to face flanges in various ways, the principal being straight face smooth, straight face

* Paper read by John B. Berryman, manager engineering department Crane Company, Chicago, before the Engine Builders' Association of the United States, at Pittsburgh, May 22, 1902.

corrugated, male and female, tongue and groove and 1-32 inch raised face inside bolt holes. For pressure of 180 pounds or less, our experiments go to show that a straight concentrically corrugated face will hold a Rainbow or copper gasket without trouble. We have made repeated tests with pressures up to 1000 pounds without blowing out the gasket. There is no manufacturing objection to male and female facing other than increased first cost, and the fact that such goods are not carried in stock and there is always a delay in filling orders, but operating engineers have frequently complained to us about the difficulty they experience in changing gaskets if for any reason it is necessary to break in on the line. It is a severe task to spring a large heavy pressure line apart sufficiently wide to permit of removing the old gasket and putting in a new one.

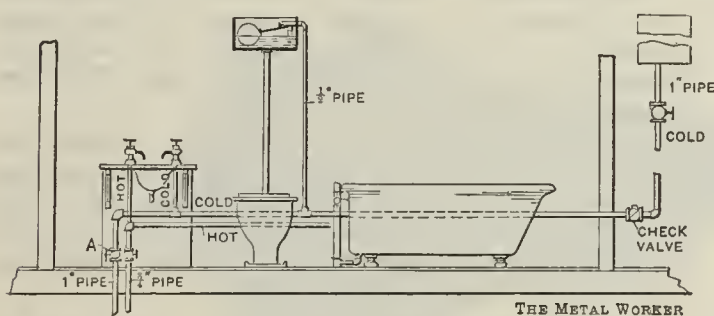
The tongue and groove joint is similar to the male and female, except that the recess is not carried out to the inner wall of the pipe. The end of the pipe is exposed to the pressure at all times and the joint is undesirable on that account.

(To be continued.)

PROBLEMS THE PLUMBER MUST SOLVE.

BY D. F. N.

Those who examine the accompanying sketch of a part of the plumbing in an up to date dwelling will find little to criticize, yet in it was the cause of considerable annoyance to the owner and his family. The work was



Problems the Plumber Must Solve.

in a house situated in the aristocratic section of upper Fifth avenue, New York, where in the evening the neighborhood is very quiet, making any unusual noise intolerable. It seems that in this fine residence, when the family least expected it, often as they were about to retire, and even after retiring for the night, a noise would begin. Sometimes it would commence in one part of the building, and sometimes in another, or at the third and fourth story bathroom, alternately. The noise developed last year about the holiday season and as a good head of steam was carried on the heating plant a steam fitter was called in to locate the cause of the trouble. After a thorough examination to locate any sluggishness in his returns, air valves, &c., he found them in good condition and so informed the owner.

The plumber was next called upon to make an examination, and after trying all the valve bonnets and cock seats, removing the composition washers and replacing them with the best rubber washers and making sure there were no loose parts in any of the plumbing fixtures in the building, he reported to his employers the condition in which he had left the plumbing work, and expected that no further trouble would be reported after his visit. To his dismay, however, a telephone call brought him before his employer to be informed that the nuisance still existed. He was told that arrangements had been made with the owner for him to stay at the place until the noise occurred and then to choke it off. In the evening the plumber arrived and continued his search for the trouble. All of the piping seemed to act properly, until suddenly in the early morning the noise appeared as if a trombone was being blown. It continued for ten minutes and then ceased for a time to start again. Sometimes the noise appeared to come from the kitchen sink, then again in the owner's bathroom. Finally, the trouble was located on a branch that was taken off from the double system of water

service pipes in the building, between the tank and the street pressure to supply the flush tank to the servant's closet, which was located on the fourth floor. With this clue as to the location of the trouble, the turning off of the controlling valve A on the street pressure pipe caused the noise to cease. This led to an examination of the interior of the ball cock in the flushing tank, when it was found that the washer in it was completely worn out on one side. This was replaced with a new washer and there was no further trouble.

This experience indicates that such nuisances must be caught when in action to be arrested. The more experience the journeyman plumber has before he is sent to look after such nuisances the more capable he will be to apply the remedy. Information on such subjects can best be secured in talks with different experienced journeymen. However simple the trouble may seem it is well to store away the information for future use in cases where experience alone is the best guide in detecting the cause and applying a remedy for troubles.

New York City Notes.

M. J. Moran of 913 Sixth avenue was the lucky bidder for the plumbing in the Hotel Bristol, at Fifth avenue and Forty-second street, which is now being altered into an office building.

Reynolds & McMahon have been fortunate in getting the plumbing of several of the large apartment hotels now being put up in the Forties between Fifth and Seventh avenues. They are now busy with a large job on Forty-ninth street, between Sixth and Seventh avenues.

Many of the individual building operators have combined into companies and will erect buildings, plans for a number of which have been filed. One of the causes of this is that larger and more expensive buildings are the only ones that are profitable to erect under the new Tenement House law. Another is that building loans can be obtained at a cheaper rate, or else done away with altogether, the company building on its own capital and credit. These companies will make the subcontractors more sure of their money and stiffen prices of property by reducing the number of foreclosures and forced sales.

Among the jobs lately given out and now under way is a large apartment house on 149th street, west of Eighth avenue, in which F. K. De Lacey is doing the plumbing; E. J. Hurley has the plumbing in two private houses on Fifth avenue, between Eighty-eighth and Eighty-ninth streets; J. J. Ahrens is plumbing three private houses on Audobon avenue, near 168th street; W. G. Cornell Company have the extension to the Germania Savings Bank at Fourth avenue and Fourteenth street; John Frick is plumbing the store and tenement building at Third avenue and Thirty-third street, and J. J. Fleming has an apartment on 116th street and Lenox avenue.

T. J. Tuomey is another of the plumbers with a Fifth avenue mansion job. He is doing the plumbing in one just below Seventy-ninth street. J. B. Barry is busy finishing up an apartment at the corner of Sixth avenue and Fifty-eighth street and is well along with one on Fifty-seventh street, west of Sixth avenue.

John A. Chambers of the old plumbing firm of Chambers and Lemon, 626 Columbus avenue, died last week after a long and painful illness. The funeral services were attended by many of the trade.

Coyle & Baaden of 83 Maiden lane are doing the overhauling in the American Express Company's stables at Lexington avenue and Forty-eighth street; W. H. Spelman & Co. are doing the addition to the Simpson-Crawford Company's building running from 121 to 131 West Nineteenth street; W. G. Cornell has a build-

ing on West Thirty-fourth street, between the Saks Building and the Savoy Theatre; Oliver Barratt has a store and loft building at 211-213 Park row; Huston & Corbett are plumbing a building on Thirty-fifth street running through to Thirty-sixth street, near Tenth avenue, which is to be a storehouse, factory and stable for the New York Bottling Company, and A. J. Smith of 1439 Madison avenue is doing two apartments on 113th street, between Seventh and Eighth avenues.

* * *

The State Executive Committee held a meeting in Rochester last week. Treasurer A. H. Brown and Vice-President B. F. Donohoe, who attended from this city, report that business is booming through the State and that the association matters were never in a more flourishing condition.

* * *

The Tracy Plumbing Company are busy with the new elevated power house and station at 110th street and Eighth avenue, besides which they are overhauling many of the company's stations.

* * *

Samuel Kessler of 504 Park avenue was the fortunate plumber in bidding for the new Grand Theater job at Grand and Forsyth streets. This is one of the largest jobs to be done on the East Side.

* * *

The Greater New York Association will hold its regular August meeting in connection with Queen's Branch at the New York Hotel Seaside Landing, Rockaway Beach, L. I., next Tuesday afternoon. The bowlers and bathers will doubtless be in attendance and after the meeting adjourns will be able to show their skill.

Heating and Plumbing Notes.

A CHARTER has been taken out by the Master Plumbers' Association of Norfolk, Portsmouth and Berkeley, Va. The officers are C. L. Forster, president; W. H. Barnard, vice-president; R. F. Lanier, secretary; A. W. Fairer, treasurer, and H. A. Vellines, sergeant-at-arms. E. L. Guy and P. J. Riley of Portsmouth and A. W. Kent are the directors.

W. F. RUTTER & Co., Lawrence, Mass., have completed the steam fitting in the factory of the American Woolen Company at Maynard, Mass., after spending ten months on the work.

THOMPSON BROS., Philadelphia, bid \$25,900 and secured the contract for heating and ventilating the Newton Girls' Grammar School in that city.

C. SCHMIDT, McKean, Ill., has the contract for plumbing the new residence of S. S. Chapeli.

THE plumbing shop of William Loane, San Francisco, Cal., was recently damaged to the extent of \$200 by a fire.

CONTRACTING QUARTERMASTER R. F. TURNER, Des Moines, Iowa, will receive bids until August 25 for plumbing, electric wiring, steam heating and gas piping for several buildings, including officers quarters and barracks, at Fort Des Moines, Iowa.

THE CLEVELAND STEAM FITTING & SUPPLY COMPANY of Cleveland, Ohio, have the contract for a central heating plant for the People's Saving & Loan Association Building, the Sargent Building, Rhodes Hall and a new building that is being erected in Cleveland.

THE OLIVER SCHLEMMER COMPANY, Cincinnati, Ohio, are sending out an announcement to the effect that the engineering and contracting business formerly conducted by Oliver Schlemmer has been incorporated under the title of the Oliver Schlemmer Company with the following officers: President, Oliver Schlemmer; vice-president and general manager, Clifford T. Schlemmer; secretary and treasurer, Oliver H. Schlemmer. The announcement states that the company are well equipped for handling steam and hot water contracts of any magnitude and that they make a specialty of power pipe fitting. The concern are unusually well equipped for installing plumbing and drainage systems.

In addition to a large assortment of stock carried they are prepared to cut Pipe to order on short notice. The company send with their announcement a list of many prominent buildings in Cincinnati and vicinity in which they have installed the plumbing and heating systems.

CITY ENGINEER FLOYD of St. Joseph, Mo., has issued a notice that plumbers who open the street for making surface connections must be more careful in replacing the paving or permits for additional work will be refused to them.

THE POND & HASEY COMPANY, Minneapolis, Minn., bid \$2625 and secured the contract for heating the school at La Porte, Iowa.

THE HITCHCOCK SUPPLY COMPANY, Springfield, Mass., wholesale dealers and jobbers in Plumbers', Steam Fitters' and Tinsmiths' Supplies, have increased their paid in capital from \$50,000 to \$80,000 to meet the needs of their growing business.

THE Council of State has authorized the borrowing of the money needed to equip the A. & M. College at Raleigh, N. C., with a steam plant for heating the college and operating the Textile Building.

CITY ENGINEER J. C. McCABE, Topeka, Kan., favors the idea of making his department more self sustaining by charging plumbers a fee to open the street for making water and sewer connections.

C. H. BARKER, custodian of the Post Office at Portland, Me., will receive bids until August 18 for plumbing the building.

THE THOMPSON METER COMPANY, 79 Washington street, Brooklyn, N. Y., have arranged so that master plumbers in New York City can get their orders for Meters filled at the New York Pipe Yard, 105 Fulton street, New York City.

THE McCORMACK HEATING COMPANY, Wallingford, Conn., have the plumbing for the new factory building now being erected by the R. Wallace & Sons Mfg. Company in that city. They also have the contract for heating the building being erected at Great Barrington, Mass., for the Berkshire Block Company.

THE plumbing trade are receiving from John H. Lawless, 138 Third street, Jersey City, N. J., a circular giving full description and directions for using the Lawless Plumbers' Force Pump, designed for removing obstructions from pipe and plumbing systems either by suction or by force. This Pump is made strong in every part and is capable of creating a high pressure.

A FOLDER, having a portrait of Uncle Sam in colors, discloses its identity when Uncle Sam takes off his hat and it is found that he does it for the purpose of bringing to the attention of the recipients the merits of the Gurney Bolders and Radiators made by the Gurney Heater Mfg. Company of Boston, Mass.

A. J. POTTS & Co. of St. Peter's, Minn., bid \$2800 and secured the contract for heating the Chaska Court House.

THE ELECTRIC HEATING COMPANY, Detroit, Mich., are sending out under date of July, 1902, a catalogue supplement No. 30, showing new designs and additions made to their line of manufactures. The supplement illustrates and describes Electric Cooking Ovens, Range Cooking Outfits and Glue Pots.

THE New York State Board of Armory Commissioners will receive bids until August 12 at 280 Broadway, New York, for heating the Armory of the Sixty-fifth Regiment in Buffalo, N. Y.

CHARLES B. SCOTT of Scranton, Pa., has secured the contract for the steam heating plant in the Simpson M. E. Church in that city.

HART & CROUSE COMPANY, Utica, N. Y., have sent to W. M. Mackay, manager of their New York office, at 235 Water street, a section of their new Royal Boiler having a 40-inch grate. This section is 5 feet wide and 6 feet high, and is one of the largest sections on exhibition in New York City. The section shows a large fire surface through the use of an auxiliary crown sheet. The upper portion of the boiler section is made to extend beyond the water leg and provides for a long fire travel to utilize the heat of the products of combustion. The

Boilers made from these sections are well calculated to carry a large amount of radiation. The fire chamber is equipped with a grate and is so arranged that it can be operated with little labor and keep the fire in a live condition.

THE employees of the Ashland Sheet Steel Company, Ashland, Ky., numbering nearly 200, who are members of the Amalgamated Association, struck work last week owing to President L. A. Kelly refusing to sign the Amalgamated wage scale. A majority of the men employed in the Ashland plant were formerly employed at the Sheet mills in Cambridge, Ohio.

THE Warren department of the National Tube Company, at Warren, Ohio, which has been idle for some time, is to be dismantled. The better part of the equipment of the plant will be removed to other works owned by the National Tube Company.

THE E. KEELER COMPANY, Williamsport, Pa., were awarded a contract aggregating a half million dollars for 48-inch Riveted Steel Pressure Pipe for the White Mountain Paper Company. This Pipe will run from Portsmouth, N. H., to Berwick, Maine, a distance of about 12 miles, and a half mile of it will be 50 feet under the river.

J. M. KLINE, Beavertown, Pa., is the patentee and manufacturer of the Kline Hydraulic Ram, which, he claims, is able to deliver water to a greater altitude under similar conditions than any other.

CHARLES B. HOOPER, who for 34 years had been connected with the Colwell Lead Company at 63 Centre

Nair, Wm. H. MacDonald, J. F. Tattersall, Robert Hardgraves and David McGinnis.

New Firms and Changes.

THE TROTT FUEL BURNER COMPANY of Birmingham, Ala., have been organized with a capital of \$10,000 by John H. Peebles, T. T. Ashford and G. Ghisholm, for manufacturing a Burner for fuel oil.

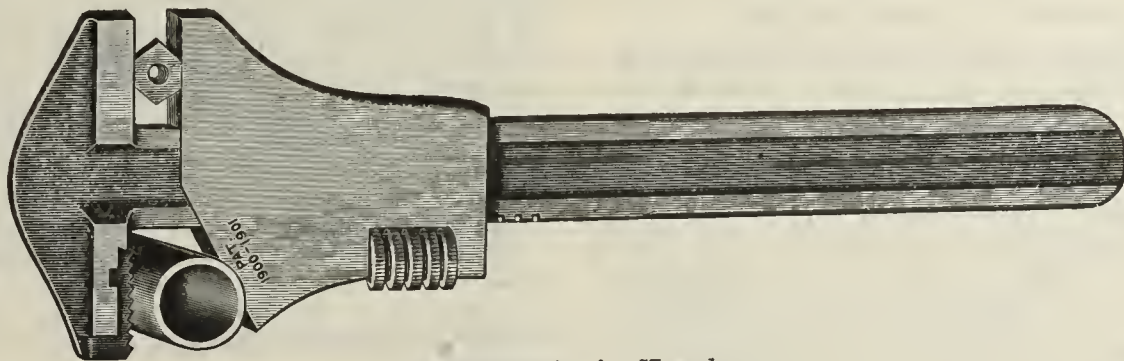
THE plumbing and tinsmithing firm of Gibbons & Donahue, Great Barrington, Mass., will in future be conducted by Mr. Donahue. Mr. Gibbons retires from the firm.

THE BALL CHECK LIGHT COMPANY of 525 Main street, East Orange, N. J., have been incorporated with a capital of \$1,000,000 by Edward T. Magoffin, Frank R. Serles and Walter H. Bond. The company will manufacture, buy, sell and deal in all devices and appliances for light, heating and power, either electrical or gas.

ELLIS W. MORSE & Co. are about opening up in the mill and steam supply business at 112 Court street, Binghamton, N. Y. They will do both a retail and jobbing business, and expect to cover considerable territory outside of Binghamton. The new firm will be pleased to receive catalogues and price-lists pertaining to their line.

Dudly's Combination Wrench.

The A. Dudley Mfg. Company, Menominee, Mich., are placing on the market the combination wrench shown herewith. It is made of steel and the working



Dudly's Combination Wrench.

street, New York, died suddenly on July 31. The deceased, who was a cousin of the late B. Frank Hooper, president of the Colwell Lead Company, was confidential bookkeeper and assistant treasurer of the concern, as well as a stockholder, and acted as trustee of the Hooper estate. He was born in New York City 64 years ago and had lived there all his life. He was greatly affected by the death of his cousin, to whom he was closely attached, and this is thought to have hastened his own end.

GEORGE W. DUNN, secretary of the Soldiers' and Sailors' Home at Bath, N. Y., will receive bids until August 14 for reconstruction and repairs to the electric plant, steam plant, heating stacks, fresh air ducts and heating and ventilating systems at the hospital, also for alterations and betterment to the plumbing in the hospital.

UNDER date of August 6, E. D. Hornbrook, president of the Association of National Plumbers, has issued from the headquarters in Kansas City a supplement to the "Directory of Recognized Master Plumbers." The supplement contains five pages of new names and one page of names to be erased from the official directory.

THE JOHN SIMMONS COMPANY, 110 Centre street, New York City, are attracting some attention in the trade with their handsome new auto delivery truck of 4 tons capacity. The chauffeur is one of their regular truckmen, who has found no more difficulty in managing this "auto" than a pair of horses.

THE master plumbers and the journeymen plumbers of Paterson, N. J., have united in an excursion to Rackaway Beach, L. I., to enjoy a clambake and shore dinner, at which they are regaling themselves to-day. The Committee of Arrangements are J. C. McNab, J. P. Mc-

parts carefully tempered. The upper jaw of the pipe wrench is interchangeable and can be replaced when necessary. The wrench is referred to as having a sure grip and quick release, as holding pipe, rods, studs and square or hexagon nuts, and as being adapted to the use of steam fitters, plumbers, machinists, miners, engineers and engine builders. The wrenches are made in four sizes: No. 1, 12-inch, with interchangeable jaw; No. 2, 12-inch, without interchangeable jaw; one 7 and one 9 inch automobile wrenches.

According to an account in the *Scientific American*, the air resistance to the rotation of a fly wheel may cause a considerable loss of energy. A 450 horse-power engine, direct connected to a generator, has a fly wheel with channel shaped arms. The tests were made by using the generator as a motor, driving the fly wheel up to normal speed. It required 13,300 watts to rotate the wheel and shaft, but by inclosing the arms in a sheet iron casing the wheel was driven by an expenditure of 9874 watts. The saving effected by use of the shield was 5.7 horse-power, or 1.2 per cent. of the power of the engine.

The Buffalo Natural Gas Company, Buffalo, N. Y., announce that a sufficient supply of natural gas from the Pennsylvania fields has been secured, so that the extra demands made upon the company by manufacturing concerns in Buffalo can now be met. It is stated that some hundreds of concerns and individuals who have for some time past been applying in vain for connection with the company's natural gas supply will now receive that connection.

A trolley line is to be built at Franklin, N. H., without a track upon which to run the cars.

THE LETTER BOX.

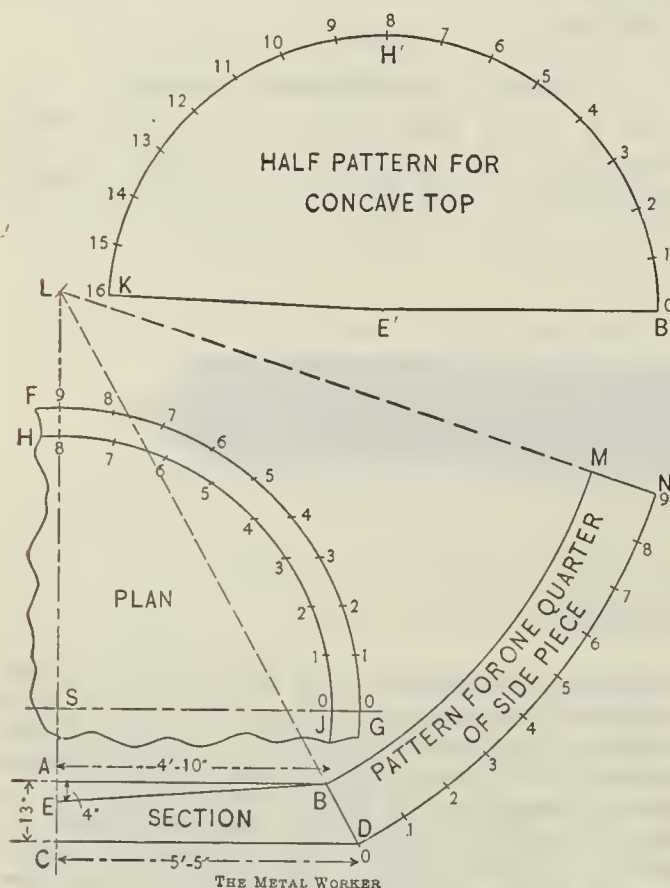
Inquiries in regard to practical questions of general interest are invited, in reply to which we shall be glad to receive suggestions and information from our readers.

Correspondents are requested in all cases to give their names and addresses, which will not, however, be published or disclosed without their consent.

PATTERNS FOR A CONCAVE FURNACE TOP.

From Furnace, Rochester, N. Y.—Will *The Metal Worker* please tell me how to cut the patterns for a furnace top of the following dimensions: Diameter at bottom, 10 feet 10 inches; diameter at top, 9 feet 8 inches; depth, 13 inches, the concave top to be 4 inches deep?

Answer.—The concave top constitutes an inverted cone whose base is 9 feet 8 inches in diameter and whose altitude is 4 inches. The radius with which to describe the pattern will be the slant height of the cone found by constructing a diagram of the same, either full size or with accuracy to a scale not less than one-fourth full size. In the accompanying illustration A C represents the vertical center line of the furnace top.



Patterns for a Concave Furnace Top.

Draw A B and C D horizontally 13 inches apart, representing respectively the upper and lower lines of the article. Measuring from the center line, make A B 4 feet 10 inches long, one-half the required upper diameter and make C D 5 feet 5 inches long, one-half the required lower diameter, and draw B D. Also set off on the center line the point E 4 inches below A and draw A E, thus completing a sectional view of the furnace top. Then will E B be the radius for the pattern of the concave top, as above described, the pattern being shown in the upper part of the diagram.

To obtain the circumference of the pattern it will be necessary to first construct a quarter plan of the top. Therefore, from any point as S on the center line extended, with radii equal to A B and C D, describe the quarter circles H J and F G, terminating them at the top against the center line and at the bottom, at the line S G, draw horizontally from the point S. The circumference of the quarter circle H J, as measured by the equal spaces designated by the points 1 to 8, may then be set off on the line B' H' of the pattern, as shown, and if one-half the pattern should be required in one piece the arc B' H' may be extended to K, making H' K equal to B' H', as shown by the eight additional spaces.

To find the radius with which to describe the pattern for the sides of the furnace top, extend the line B D of the sectional view upward until it intersects with the center line A C extended at L. Then will L B and L D be respectively the radii for the upper and lower edges of the side pieces. From L as center, with these radii, describe the arcs B M and D N, as shown, and make the arc D N equal in length to the arc G F of the plan, as shown by the corresponding equal spaces in both. Then will B M N D be the pattern for one-quarter of the side piece. The necessary edges for joints should be allowed.

BOILER TOO LOW.

From F. R. P., Southampton, N. Y.—I notice in *The Metal Worker* of August 2 a communication from "B. K. M." regarding a noise in the water back. I would like to say through your columns that if the arrangements are as shown the height of the boiler can have no possible effect on the noise, as I have placed boilers on the floor below the range and got perfect results. If there is no dip or traps in the hot water circulating traps, and the water back has no stoppage which could be determined by the temperature of the water drawn, there are only two things that could cause the trouble. The boiler feed may be connected to the hot water outlet instead of the cold water inlet. If this is not the cause, the only thing left is "too much water back." The steam generated accumulates in the boiler and not in the water back. This takes place probably to such an extent that the water is forced out of the boiler through the cold water inlet leaving the boiler full of steam instead of water. Consequently there is no circulation at all; hence the noise. If this takes place, hot water could be drawn from some cold water faucet near the boiler. As "B. K. M." does not give the size of the water back he will have to determine this for himself. The latter is probably the cause of the trouble, and by insulating part of the water back it could be avoided.

Note.—Notwithstanding the positive views of our correspondent that the location of the boiler is not the cause of the trouble, we are of the opinion that boilers so located more frequently cause noise, while the circulation is certainly more sluggish than in those located differently.

RETIMNING A SOUP KETTLE.

From J. D. W., Spokane, Wash.—Please explain the best way to tin a soup kettle made of copper and of about 30 gallons capacity. The kettle was set up on March 15 last and I had to retin it on June 1. The tinning which was on the kettle when it came from the factory only lasted two and a half months. After I tinned it the coating lasted about seven weeks with about the same use. I would like to know if there is some method of tinning which would make it more permanent. I should also like to have those who do such work inform me how they base their system of charging for it.

Note.—We shall be glad if our friends in the trade will render such assistance as they can to this correspondent, both as to the practical work and the charges. In the mean time we would state that in *The Metal Worker* of March 15, 1902, the method of retinning copper cooking utensils was carefully explained. The process for doing such work is the same in principle, although larger fires will probably be required for the work above mentioned. This subject is also treated at some length in "The Art of Coppersmithing," which can be furnished by our Book Department.

The system of charging for work of this kind is based on the cost and is made in accordance with the conditions of the job, the skill required and the size of the work. The actual cost is multiplied by two or three, according to the size of the work and the difficulty in handling it. On some kinds of light work a charge of 4 or more cents an inch is asked, the diameter and depth being added together to determine the number of inches to be charged for. The system of charging varies, however.

PIPING FOR HIGH PRESSURE STEAM.

From L. G. H., Lancaster, Wis.—I have a customer here who is handling a steam laundry with a traction engine and boiler in a basement, and he wants to put in some pipe coils to heat the floor above with steam. What I should like to learn from *The Metal Worker* and its readers is which would be the best and cheapest manner of disposing of the condensation from the coil and the best method of running the supply in return pipes. The pressure runs up to 120 pounds.

Note.—We shall be glad if our readers will give their views on this problem. In the mean time we would suggest that if live steam is to be used in the heating coil, there is no reason why the condensation should not be brought back from the coils and connected with the boiler below the water line. The heating, however, could be done just as readily with steam of a much lower pressure, or the exhaust steam running the apparatus. If there is not a sufficient quantity of the exhaust steam or a low pressure is to be carried on the heating coils, a reducing valve would be necessary to reduce the pressure to about 5 pounds. Beyond this valve the steam pipe should be carried with a downward pitch to the place where the risers are carried up to the coils and the main should be of ample size to supply the heating surface with which it is to be connected. A small relief pipe can be connected with the main at the risers to allow the condensation to be carried to the return pipe. In case a low pressure is carried on the heating coils the return pipe cannot be connected with the boiler direct, but should be connected with a steam trap to prevent the waste of steam. This will discharge the condensed water either into the receiving tank, where it can be pumped into the boiler, or into the drain. There is no great difficulty in doing this work, but it requires some knowledge, and it is probable that the employment of an experienced steam fitter would be advisable in order to learn in detail the conditions that must be considered and also to determine the size of the radiators and the supply of the return pipes to them.

RUSTING OF GALVANIZED IRON ROOF.

From C. & H., Northville, Mich.—We have taken *The Metal Worker* for the past 15 years and have received a great deal of good information from it. We are now up against the real thing and ask you to help us out, if possible. Two years ago we put on 12 squares of No. 28 galvanized iron roofing over a store, but laid it over a tin roof that was in fair shape, except for holes, and laid paper between the tin and the iron. The galvanized iron roof has rusted from the under side and is as thin as tissue paper, as shown by the sample of the rusted roofing which we send herewith. We have put on galvanized iron roofing before in this town for several years, but have never had this kind of trouble. Is the trouble caused by putting the paper between the tin and iron, or is it caused by not removing the old tin and it holding moisture?

Answer.—The sample of rusted iron sent by our correspondents shows the galvanizing on the outside in fair condition while the inside is thoroughly rusted. Our correspondents do not state, however, what kind of paper was used between the tin and iron roofs, nor for what purpose the store was used. Some roofing papers contain chemicals or acids, which would have a tendency to rust the metal. If, however, the paper was not to blame, the rusting was undoubtedly caused by the condensation between the tin and iron roofing. It is possible that the paper absorbed the condensation and was constantly moist, when the outside air was cool, or, in other words, when there was a difference in temperature between the outer air and the air space between the two roofing materials. The damp paper lying constantly against the iron roofing would cause the rusting, as shown. We would suggest that the old tin roof be ripped off, and if there is no false ceiling to the store, that two ventilators be put in the roof, with dampers operated from the store. This will allow the escape

of the warm air at the ceiling, which would otherwise cause condensation against the bottom of the roofing. It would be best when laying the roofing to omit the paper.

BURSTING SEAMS IN GUTTER.

From S. P. O., Walton, N. Y.—Can you inform me if a copper gutter will stand more strain from ice forming in it than a tin one? I have a double pitched roof with a gutter at the eave of each side. The conductor freezes full of ice, and the water and snow stand in the gutter and freeze, breaking the seams. The roof is large and the gutter is shallow and flaring; but it causes me much trouble. Can you suggest a remedy?

Answer.—The bursting of the seams is caused by the expansion and contraction of the metal, which would also occur in a copper gutter if the seams were not well soldered. If there is any way by which the conductor could be kept clear, as by introducing a small steam pipe at the bottom of the conductor, thereby keeping the conductor open, this would prevent the trouble. However, if this cannot be done we would suggest that the seams be thoroughly soaked with solder; then over the seams solder another strip of metal about 2½ inches wide, soldering each side, which will overcome the trouble. Care should be taken when soldering this strip not to merely skim it over with solder, but, on the flaring parts of the gutter, thoroughly soak with solder and place small ridges of solder at intervals to strengthen the seam.

The Ventilation of Subways.

A serious question has arisen in connection with the underground tube railway, with which London within a few years is to be pierced in all directions. It has been argued, says the *New York Sun*, from the start of the "tuppenny tube," that the ventilation was automatic and well nigh perfect by reason of each train nearly filling the tube and acting like a piston, forcing out the bad air and drawing in the fresh air. The public accepted this theory; as there were no bad odors, it was assumed that the atmosphere was healthful.

The patronage has become so great recently that the cars at certain hours have been as badly crowded as on the New York elevated railways, and many passengers began to complain of feelings of dizziness and oppression. It was found that this was due to the presence of a great excess of odorless carbonic acid gas generated by human lungs. A healthy atmosphere should not contain a larger proportion than seven parts in 10,000 of this gas. Ordinary London air contains four parts, a London fog seven parts, and the average living room seven. The standard of purity required in English workshops by the Factory act is not to exceed nine.

Three tests were recently made of the air in the tube. The first sample, taken from the top of a crowded car, showed 27½ parts of carbonic acid gas. This is distinctly poisonous. A second sample, taken from a moderately filled car, showed 13 parts. A test made of the air in Chancery lane station as a train was leaving, when the purest air should be obtained, showed 13.8-10 parts.

It is believed that this serious situation can be much improved by closing all the openings between the two tubes. There is always a lively breeze blowing in the present tubes, but the foregoing tests show that the air simply moves in what may be described as a vicious circle.

There seems to be need of a term to designate the new terrors of our streets, those speed crazed cranks who are now doing so much to bring the automobile into disrepute. Various terms are loosely applied, but a new compound would be desirable. The *Horseless Age* suggests the word "automaniac," which is in harmony with several well-known words of Greek derivation already rooted in the language as descriptive of victims of diseased and abnormal appetite (dipsomaniac, kleptomaniac), and conveys a strong and true picture of the mental state of these offenders against law and decency.

TRADE REPORT.

MARKET SUMMARY.

Pig Tin is quiet and $\frac{1}{4}$ c. higher in price.
Copper is in light demand and without change in price.
Pig Lead is dull and firm.
Spelter continues scarce and strong, with light demand.
Cookson's Antimony is $\frac{1}{4}$ c. lower.
Nickel is in fair demand and slightly lower in large lots.
Aluminum is firm and in good demand.
Tin Plates are very quiet and unchanged in price.
Black Sheets are quiet, with prices unchanged, but weaker.
Galvanized Sheets are quiet and unchanged.
Scrap Iron is strong and higher.
Foundry Iron is very scarce and prices nominal.
Sheet Copper is in fair demand and firm in price.
Sheet Zinc is firm; demand is moderately active.
Hardware is seasonably quiet, with prices strong in nearly all lines.
Cast Iron Soil Pipe and Fittings are in active demand, with some scarcity and prices strong.
Wire Nails are quiet, with prices unchanged.
Cut Nails are in moderate demand at unchanged prices.
White Lead is moving in fair volume with prices firm.
Window Glass is quiet and unchanged.
Linseed Oil is moderately active and firm.
Spirits Turpentine is quiet and unchanged.

METAL MARKET.

Pig Tin.—In the early part of the week the market for Tin was quiet and unchanged. The nonarrival of steamers which were expected gave the speculative element an opportunity for bidding prices up, and they did it. Up to Thursday only 60 tons had arrived, while 965 tons were due. That morning a steamer bearing 365 tons arrived and prices fell to about the level of a week ago. The activity on the Metal Exchange was purely the work of the speculative element and had no bearing on general trade, which is still quiet. At the close the market was firm. Straits Pig in small lots was quoted at $29\frac{1}{4}$ c. to 30c. per lb.

Copper.—The market is very quiet and still in buyers' favor. Prices are practically unchanged from last week, but the tone of the market is easier. Jobbers quote Lake Ingot in small lots at 13c. per lb., and Casting Copper at $12\frac{1}{2}$ c. to $12\frac{3}{4}$ c.

Sheet Copper.—The demand for Sheet Copper continues of fairly good proportions and prices remain firm on the basis of 18c. per lb. from store.

Pig Lead.—The market here is entirely without change. Demand is slow, as is customary at this season of the year, and prices are firm. American Pig in small lots is quoted at 4.45c. to $4\frac{1}{2}$ c. per lb. St. Louis advices report conditions as very little changed in the Lead market, and the week under review shows a moderate volume of business at old figures.

Spelter.—The market for Spelter remains firm. Spot metal is still very scarce and strong in price. The demand from all sources is comparatively small. Good Western brands in small lots are quoted by jobbers at 6c. to $6\frac{1}{2}$ c. per lb. St. Louis advices report transactions in the Spelter market on a fairly liberal scale and prices continue to harden.

Antimony.—Cookson's has declined $\frac{1}{4}$ c. and is quoted in small lots at $10\frac{1}{4}$ c. to $10\frac{1}{2}$ c. Hallett's is unchanged at $8\frac{3}{4}$ c. to $8\frac{7}{8}$ c. per lb. in small lots.

Nickel.—This metal has declined somewhat, so far as wholesale prices are concerned, but small lots are quoted at from about 55c. to as high as 60c. per lb.

Aluminum.—The demand for Aluminum continues active and prices are without change. Small lots of No. 1 Ingot, guaranteed 99 per cent. pure, are quoted at 37c. per lb. and 100-lb. lots at 35c.

Tin Plates.—The market for Tin Plates is unchanged. The demand is slow and jobbers' prices continue at about the figures quoted for some time past. The American Tin Plate Company are now quoting for delivery up to December 1 at the figures now ruling. Stocks are increasing in volume, and it is likely that a large proportion of the mills will be shut down, owing to the failure of the men to accept the proposition of the American Tin Plate Company of a reduction in the wage scale on Plates for export. The retail trade was rather more active this week. Jobbers are quoting American Bessemer Coke Plates, IC, 14 x 20, in moderate sized lots, delivered at New York and corresponding points at about \$4.70 to \$4.90 per box.

Sheets.—There is little or no improvement to note in the Sheet market, which continues quiet and is disappointing to those who had hoped that tonnage would pick up before this. The new capacity in Sheets which has come on the market in the past year is now being severely felt, as there is not enough business being placed to go around and keep all the mills busy. Quite a number of Sheet mills are idle at the present time and output has been reduced a good deal. Stocks are increasing and prices show a weakening tendency. Jobbers' quotations, however, are not quotably changed. No. 27 One Pass Cold Rolled Soft Steel Sheets in small lots are quoted at about 3.70c. and No. 24 Galvanized at 4c to 4.10c.

Chicago advices are as follows: No new features have been developed, with the exception of Galvanized prices, which are sustained. Sheets are heavy and weak. No. 27 Black Sheets in small lots from store are quoted at 3.45c. to 3.55c., and Galvanized Sheets at 4.55c. to 4.65c. for No. 27.

Old Metals.—The demand for Scrap Iron is now active and prices have stiffened somewhat. Dealers are paying about the following rates for moderate sized lots delivered at New York or corresponding points:

Heavy Copper.....	per lb. 10 c.
Light and Tinned Copper.....	per lb. 9 c.
Heavy Brass.....	per lb. 8 c.
Light Brass.....	per lb. $6\frac{1}{2}$ c.
Lead.....	per lb. $3\frac{3}{4}$ c.
Tea Lead.....	per lb. 3 c.
Zinc.....	per lb. $3\frac{1}{4}$ c.
Pure Aluminum Sheet.....	per lb. 22 c.
Cast Aluminum.....	per lb. 17 c.
No. 1 Pewter.....	per lb. 18 c.
No. 2 Pewter.....	per lb. 9 c.
Tin Plate Scrap, per gross ton.....	to \$5.00
Wrought Iron Scrap, per gross ton.....	\$14.50 to 15.00
Heavy Cast Scrap, per gross ton.....	12.50 to 13.00
Stove Plate Scrap, per gross ton.....	9.50 to 10.00
Burnt Iron, per gross ton.....	7.00 to 7.25

THE PIG IRON MARKET.

NEW YORK.—Continued buying for delivery during the early part of 1903 is reported, but in some instances negotiations are dragging because buyers are inclined to hold out for lower prices. A good deal of Foreign Pig Iron is being offered, and there is quite some competition among dealers for importation. Scotch Pig is being offered at \$20 to \$23, the higher price being demanded for special brands. Middlesborough No. 3 is quotable at \$18.75 to \$19. For spot lots of Scotch Iron considerably higher prices are asked and obtained. For delivery in 1903 the following quotations are made: Northern Iron, at tidewater, No. IX, \$22.75 to \$24.75; No. 2 X, \$21.75 to \$22.75; No. 2 Plain, \$20.75 to \$21.75. Tennessee and Alabama brands, in New York and vicinity, No. 1 Foundry, \$22 to \$23; No. 2 Foundry, \$21.25 to \$22; No. 3 Foundry, \$20.75 to \$21.25.

CHICAGO.—The general character of the market has changed but little since last report. There are still a

few large buyers in the market ready to place contracts for next year's delivery, but most of the transactions during the week were from the smaller melters; nine-tenths of the business transacted has been for next year's delivery—that is, running up to July 1. Probably about half the tonnage sold during the week was of Northern brands. The urgency for spot Iron and Iron for delivery during the last quarter of the year has met with little relief, and the stringency of the market is being admitted by consumers as well as by furnaces. Sales of spot Iron have been made in carload lots aggregating possibly 1000 tons of Southern brands, on the basis of \$25.65 for No. 2 and \$26.15 for No. 1 Foundry, Chicago. Twenty-five hundred tons of Northern No. 2 Foundry have sold at \$25 and 200 tons of special Southern brands at \$24.50 for October, November and December, 1902. The majority of the spot Iron being sold brings a premium of \$5 per ton, and Iron for the last quarter of the year a premium of about \$3 per ton over the prices current for delivery for the first half of 1903. The following are the prices current for July, 1903:

Lake Superior Charcoal.....	\$25.00 to \$26.00
Local Coke Foundry, No. 1.....	21.50 to 22.00
Local Coke Foundry, No. 2.....	21.00 to 21.50
Local Coke Foundry, No. 3.....	20.50 to 21.00
Local Scotch, No. 1.....	22.00 to 22.50
Ohio Strong Softeners, No. 1.....	24.00 to 24.50
Southern Silvery, according to Silico.....	22.10 to 22.65
Southern Coke, No. 1.....	21.40 to 21.90
Southern Coke, No. 2.....	20.65 to 21.15
Southern Coke, No. 3.....	20.15 to 20.65
Southern Coke, No. 1 Soft.....	21.15 to 21.65
Southern Coke, No. 2 Soft.....	20.65 to 21.15

PHILADELPHIA.—The situation is the same as last week. Good Foundry Irons are as scarce as ever, the demand is as large as ever, and prospects of easier conditions as uncertain as ever. Foreign Iron is about the only kind that can be had promptly. The feeling in regard to prices in the distant future is surprisingly strong considering the high range already attained. Consumers are again beginning to figure on purchases for next year's business. A considerable tonnage was entered some time ago, after which for two or three weeks there was a halt, but now buyers are again in the market. Makers are quite willing to meet the demand at present prices, on the ground that even if there should be a further advance they will not be far astray in having order books well filled at about \$22 for No. 2 X Foundry. A fair average of existing prices would be about as follows for city and nearby deliveries during 1903, and from \$1 to \$1.50 more for this year's deliveries, the premium being mostly on Foundry grades:

No. 1 X Foundry.....	\$23.50 to \$24.50
No. 2 X Foundry.....	22.00 to 22.50
No. 2 Plain.....	21.00 to 22.00
No. 3 Middlesboro { Prompt shipments }	21.00 to 22.00
Scotch Irons { or spot. }	22.50 to 23.50

PITTSBURGH.—The market is very quiet, but strong. Consumers are pretty well covered, furnaces have most of their output under contract for this year, and Pig Iron for prompt shipment is scarce. No. 2 Foundry for prompt delivery is \$22.50 to \$23, Pittsburgh. For delivery next year No. 2 Foundry is being sold at \$21.50, Pittsburgh.

CINCINNATI.—While the volume of Iron sold for next year's delivery is not as heavy as it was the week previous, yet the week just closed shows a very nice sales account to its credit. Iron is being sold at \$17.50, and possibly in some instances as high as \$18, where special circumstances prevail, but a number of furnaces are saying \$18 to \$19, Birmingham, or else no sale, these holding firmly to the belief that it will only be a question of time, at least, until they get their price. Spot Iron is very scarce, and the high grades bring practically what the seller chooses to ask for them. A sale of 500 tons of No. 4 Southern is reported sold for August delivery at \$18.25, Birmingham. We quote, f.o.b. Cincinnati, for 1902 delivery as follows:

Southern Coke, No. 1.....	\$23.00 to \$24.00
Southern Coke, No. 2.....	22.50 to 23.50
Southern Coke, No. 3.....	22.00 to 23.00
Southern Coke, No. 4.....	20.00 to 21.00
Southern Coke, No. 1 Soft.....	23.00 to 24.00
Southern Coke, No. 2 Soft.....	22.50 to 23.50
Ohio Silvery, No. 1.....	26.10 to 26.60
Ohio Silvery, No. 2.....	25.85 to 26.10
Lake Superior Coke, No. 1.....	26.10 to 26.60
Lake Superior Coke, No. 2.....	25.60 to 26.10
Lake Superior Coke, No. 3.....	25.10 to 25.60

ST. LOUIS.—The market has shown considerably more vigor and snap the past week owing to increased inquiry and demand for Iron for the first half of 1903. In the matter of price the transactions have been on a basis of \$17 to \$17.50, Birmingham, for No. 2 Foundry. Spot Iron is as scarce as ever, and occasional car lots are about all that the market sees of this class of material. The following is the range of prices current for cash, f.o.b. St. Louis:

Southern, No. 1 Foundry.....	\$21.50 to \$23.50
Southern, No. 2 Foundry.....	20.75 to 22.75
Southern, No. 3 Foundry.....	20.25 to 22.25
Southern, No. 4 Foundry.....	19.75 to 21.75
No. 1 Soft.....	21.25 to 23.25
No. 2 Soft.....	20.75 to 22.75

CHICAGO REPORT.

Scrap Iron and Steel.—The light offerings and the increased demand from consumers enable dealers to pay higher prices for Country Scrap, the market closing strong at the higher prices. Both Wrought and Machinery Cast Scrap, as well as Stove Plate, have been advanced 50c. per ton. Old Boilers, Tubes, Turnings, Borings and Horseshoes have also been appreciated about 50c. per ton. The following are the prices paid by dealers in carload lots, Chicago:

	Per net ton.
Country Wrought Scrap.....	\$15.00 to \$15.50
Machinery Cast.....	13.50 to 14.00
Malleable Cast.....	12.00 to 13.00
Stove Plate (free from burnt).....	10.00 to 10.50
Burnt Iron and Grate Bars.....	8.00 to 9.00
Sheet Iron and Hoops.....	8.00 to 9.00
Plov Steel.....	12.00 to 13.00
Breaking Stock.....	... to 11.00
Old Boilers—whole (Iron).....	9.50 to 10.00
Old Boilers (Iron) cut in single Sheets and Rings.....	13.00 to 14.00
Old Gas Pipe and Boiler Tubes.....	13.00 to 13.50
Cast Borings.....	9.00 to 9.50
Turnings.....	12.50 to 13.00
Horseshoes.....	14.50 to 15.00

Old Metals.—But little if any change is noted in the character of the market. The demand for both Copper and Brass is only moderate, but prices are well sustained, the market being a little firmer in sympathy with Ingot Copper. Zinc continues firm with a good demand. The following are the prices paid by dealers in this market:

	Per lb.
Copper Wire and Heavy.....	10 1/2 c.
Copper Bottoms.....	9 1/2 c.
Copper Clips.....	10 1/4 c.
Red Brass.....	10 1/2 c.
Yellow Brass.....	8 1/2 c.
Red Brass Borings.....	9 1/4 c.
Yellow Brass Borings.....	7 1/2 c.
Light Brass.....	6 3/4 c.
Pipe Lead.....	3.70 c.
Tea Lead.....	3.35 c.
Zinc.....	3.35 c.
Tin Foil.....	21 c.
Pewter, No. 1.....	18 c.
Pewter, No. 2.....	11 c.
Aluminum.....	20 c.

Old Rubber.—The offerings, while not especially heavy, are more than ample to meet the demand, yet prices are without essential change. Dealers buy at the following prices, Chicago delivery:

	Per net ton.	Per lb.
Garden Hose.....	\$25.00	....
Air Brake Hose.....	45.00	....
Rubber Shoes.....	....	7 c.
Rubber Car Springs.....	....	5 c.
Inside Bicycle Tubing.....	....	22 c.
Outside Tubing.....	....	5 1/2 c.
Black Rubber.....	....	4 c.
White Rubber.....	....	8 1/2 c.

Rags.—The tone of the market is stronger under an improved demand and smaller receipts, and dealers are paying about 10c. per 100 lbs. more. Country Mixed Rags are purchased by local dealers at 75c. to 85c. per 100 lbs., Chicago delivery.

Anthracite Coal.—The local situation is dependent upon conditions at primary points, and as near as can be determined there is little change in the attitude of the miners or operators. Stocks are none too large, but the demand is light for current delivery. The movement on contracts has continued moderate. The following are the prices current, subject to a discount of 10c. per ton for shipments made during the month of August:

	Grate.	Egg and Stove.
Chicago.....	\$5.75	\$6.00
Milwaukee, Wis.....	5.75	6.00
St. Louis.....	6.20	6.45
Kansas City, Mo.....	8.25	8.50

THE HARDWARE TRADE.

Midsummer conditions continue to govern nearly all branches of the Hardware trade. The vacation season is seldom a time for great activity. Nevertheless, a few noteworthy features are observed, the most important of which is that large buyers are again beginning to place orders for Shelf Hardware. They have for some time refrained from making purchases, waiting to see how manufacturers would stand the test of the summer. But finding no indication of weakness, and realizing that if they are to get goods for their fall trade they will have to order them soon, they are entering the market. While jobbers and retailers are believed to be carrying larger stocks of goods than for many years, yet these stocks are not equally distributed through the entire line, as in some branches of trade manufacturers are still in arrears in filling their orders, although working to their full capacity. It has been the experience of all Hardware merchants for several years that the supply of seasonable goods has fallen considerably short of the demand. Every successive season through this period of prosperity they have laid in larger stocks in the expectation of satisfactorily meeting their customers' requirements, only to encounter the same discrepancy between their supply and the demand, due to the steadily increasing consumption of the country. It remains to be seen whether this year the extent of the fall trade has been measured accurately or whether a shortage will again be experienced. The fine outlook for the crops inspires a widespread belief that trade will be greater than ever and that again it will be found that not enough goods were made up in advance.

NOTES ON PRICES.

Plumbing Supplies.—Are in fairly active demand for the season, with prospects of a large volume of trade ahead. Prices rule strong throughout the list. Cast Iron Fittings are higher and it is likely that other Iron Goods will be advanced in the near future, owing to the conditions ruling in the market for raw material.

Wire Nails.—There is a continued movement of Wire Nails, as the result of a demand which is fairly satisfactory for the season. The mills are making shipments promptly, but annoying delays occur on many of the railroads owing to the large demand made upon transportation facilities. The local movement of small lots of Nails from store is larger in proportion than the demand from nearby points. Small lots from store, New York, are quoted at \$2.25 to \$2.30 per keg.

Cut Nails.—There is a temporary scarcity of some sizes of Flooring Nails in the local market, owing to the large demand and to delayed shipments from mill. Otherwise the demand is normal. Small lots of Cut Nails from store, New York, are quoted at \$2.30 per keg.

Window Glass.—The first part of August finds the Window Glass situation in a still unsettled condition. Demand for Glass is reported as being very light, and buyers as having adopted a waiting policy, exchanging stocks and buying from hand to mouth, in view of the possibility of a start of the factories on September 1. The opinion is expressed that there is too much Glass in the country for so early a start. The Jobbers' Association quotation for single and double strength Glass from store is 88 and 5 per cent. discount.

White Lead.—White Lead in Oil is in fair demand, and manufacturers are working on orders for fall delivery. Retail quotations are unchanged at 6¼ to 6½ cents per pound for White Lead in Oil.

Linseed Oil.—Demand is confined to small lots, but business in this line appears to average up fairly well with corresponding seasons of former years. The large buyers are generally supplied up to September or October. Quotations are unchanged: City Raw, in small lots ruling at 67 to 68 cents per gallon.

Spirits Turpentine.—The Turpentine market has been dull, with inquiries confined to small lots. Large buyers are not in the market, and quotations, according to quantity, remain unchanged at 47 to 47½ cents per gallon for Turpentine in retail quantities.

TRADE NOTES.

GEORGE W. HOFFMAN, manufacturer of Hoffman's Infalible U. S. Metal Polish Paste, Indianapolis, Ind., reports that owing to the constantly increasing demand for this product he has made extensive additions to his plant by the completion of new buildings, doubling its former capacity. Mr. Hoffman claims that his Metal Paste is the only preparation of the kind that does not shrink or become rancid, gummy, sticky or hard.

THE COATESVILLE BRASS COMPANY, Coatesville, Pa., have been incorporated with a capital of \$5000. The directors are James, Samuel and Walter E. Greenwood and Orville H. Daggett and William H. Denn of Coatesville.

THE AMERICAN ASBESTOS COMPANY, recently organized at Terre Haute, Ind., with a capital stock of \$1,000,000, have secured options on 4000 acres of land in Bedford County, Ind., on which are situated partially developed Asbestos and Mica mines.

AUGUSTUS J. CORDIER, vice-president and general manager of the Lalancée & Grosjean Mfg. Company, has been elected a director of the Hanover National Bank of New York, one of the oldest and most prominent financial institutions of the city.

BRAMHALL, DEAN & Co., 264 Water street, New York, are sending to the trade a four-page circular devoted to their Champion Ice Cracker, devised to take the place of a mallet and to be run either by power or by hand. It is designed for use in hotels, restaurants or other places where crushed ice is needed.

THE JOSEPH DIXON CRUCIBLE COMPANY, Jersey City, N. J., are sending out their August calendar desk blotters advertising Dixon's American Graphite Pencils.

THE ROME MFG. COMPANY, Rome, N. Y., manufacturers of Nickel Plated and Polished Copper Specialties, have established a European agency at 19 Chapel street, London, England, under the charge of William Cruger Cushman.

W. F. PFLUGER has retired from the Manitowoc Aluminum Novelty Company, Manitowoc, Wis.

J. M. TRUNK of Chunchola, Ala., is organizing a company to manufacture a tool that comprises an Anvil, Pipe Vise, Drill, Vise, and Cut-Off.

THE CAMBRIA SLATE COMPANY of Delta, Md., have been incorporated with a capital stock of \$100,000 to develop Slate quarries.

THE JOSEPH SHAFFER LAMP COMPANY have been incorporated at Wheeling, W. Va., with a capital stock of \$10,000, to manufacture Lamps. The incorporators are Joseph W. F. Shaffer, George P. Folmer, John Hunker and A. M. Schenck.

THE ZACHARY MANTEL COMPANY of Raleigh, N. C., have been incorporated with a capital stock of \$25,000, by A. D. Zachary, John E. Bridges and R. J. Hughes, for the manufacture of Mantels, Grates, &c.

THE TAYLOR & BOGGIS FOUNDRY COMPANY, Cleveland, Ohio, are manufacturers of all kinds of Light Gray Iron Castings and Builders' Hardware. In another column the company call attention to some of their specialties, including Dampers, Gas and Oil Stoves, Furnace Lamps, Molasses Gates, &c.

THE WALLACE MFG. COMPANY is the name of a new corporation formed at Detroit, Mich., with a capital of \$25,000, all paid in. The following are officers of the company: B. F. Pashby, president; Dore E. Wallace, vice-president; James C. Wallace, secretary, and Clarence C. Lowrey, treasurer. A Cooker, Patent Thimble and other articles of iron and steel are to be manufactured.

United States Consul Andrew D. Barlow of Mexico City reports to the State Department that the State of Oaxaca, Mexico, has offered a prize of \$5000 in Mexican currency to the person or company who, within three years, shall drill and put into working order an artesian well in the city of Oaxaca, or in the towns of Xochimileo, San Filipe del Agua or Hacienda del Agullera.

Exemption from all local and personal taxes will be granted to those who undertake the work, both during the time of erection and for a period of ten years after, if the results are successful. The property and use of the artesian well will belong exclusively to the person or persons to whom the concession is granted, who will also enjoy all the privileges allowed to those engaged in public works.

New Publication.

The Art of Enameling on Metal. By William Norman Brown. Publishers, D. Van Nostrand Company, New York, 1900. Price, \$1.

Mr. Brown deals with this subject in six chapters, and supplies an index at the back of the book. In the first chapter we are told what enamel really is, and the history and description of enameling is given. Enamel is a thin coating of vitreous glaze applied to some background and forming either a colored ornament or an actual picture. The word comes from the French *email*, originally *esmail*; Italian *smalto*, both from the same primordial root as the Anglo-Saxon word *smelt*. In Chapter II a very interesting dissertation is given on the various kinds of enamels—viz., the *Cloisonné*, the *Champs Levé*, the translucent and the painted. The first of these is the most ancient form. Briefly the *Cloisonné* consists of a flat plate of copper, gold or silver, upon which the pattern is made by brazing thin pieces of sheet copper or other metal, perhaps about 1-16 inch high, to the base plate. These thin upright strips of metal divide the spaces which are to contain the enamel just as fences divide field from field along a country road. The *Champs Levé* method uses a thicker base plate and the divisions are made by cutting out the metal of the plate between them, just as boys might excavate a shallow area of ground in order to hold the water necessary for a skating rink. Rinks of differing shapes, separated by narrow dykes, with ice representing variously colored enamels, would resemble the *Champs Levé* method.

Chapter III refers briefly to translucent enamels, which are described as composed of transparent enamels of every variety of color, laid in thin coatings over the design, which is incised in the metal, the figures being slightly raised in low relief and marked with a graver, so as to allow the drawing of the contours to be seen through the ground. Painted enamels are produced by a process similar to porcelain painting, except that the surface decorated is a metallic one, instead of biscuit porcelain. Next follows a description of the apparatus required for the work of enameling, furnaces and tools and methods. In fact, the book is intended more for the amateur than for the professional worker, though the practical way in which the subject is treated throughout commends it to the skilled hand as well as to the beginner. For instance, the amateur is cautioned that *Cloisonné* requires the worker to be particularly patient and painstaking, as it involves a very considerable amount of trouble and often yields very uncertain results, and the professional will notice what the author says about the possible danger that the "firing" of the enamels may weaken or impair the soldering of the metal divisions to the base and so lead to disaster.

The chapter on the composition and preparation of enamels gives what may be called "receipts," and goes on with the methods of doing the work of coating, "firing," designing and reproducing pictures or designs in enamel.

The last chapter includes designs for *Cloisonné* and painted enamels, and is very satisfactorily illustrated, as indeed the book is all through.

The efforts of amateurs the author clearly has in mind in dealing with this interesting branch of art, though he cautions his readers that its prosecution is exceedingly arduous. Even the mere student of this very ancient form of artistic representation of objects, natural or conventional, will be interested in the brief historical *résumé* which the little book of 58 pages contains. A hint is given, which is not enlarged upon, per-

haps as it might be, to the effect that heraldic devices seem to lend themselves readily, at least, to reproduction in the *Cloisonné* method. Amateurs of sufficient manipulative skill and patience might be able to reproduce coats of arms in enameled plaques, or national emblems, as for example that belonging to Sir Walter Scott's native land, of which he poetically says, "The ruby lion ramps in gold."

THOS. MANKEY & Co. are successors to N. H. Peterson in the Stove, Hardware, plumbing and gas fitting business in Newell, Iowa.

M. E. HOWERY & SON is the style of a concern who have recently embarked in the Stove, Shelf and Heavy Hardware and Sporting Goods business in Penfield, Ill.

EDWARD KENNEDY has lately opened up in the Stove, Shelf Hardware and Agricultural Implement business in Cato, N. Y.

CONTENTS.

Editorials—	PAGE.
Stoves and Fuel.....	35
Agricultural Prosperity.....	35
The Need of Trade Schools.....	35
A Good Investment.....	36
Our Foreign Trade in Iron and Steel.....	36
Assets of the United States Steel Corporation.....	36
How to Handle Range Peddlers.....	37
The Summer Stove Trade.....	37
Michigan Stove Company's Entertainment.....	37
The Iron Molders' Union of North America.....	37
The Galvano Patent Lock Stove Pipe. Illustrated.....	37
Conventions in the Stove Molding Industry.....	38
The Plastic Stove Lining Makers.....	39
Luster Backwalls for Open Grates. Illustrated.....	40
Acorn Stoves and Ranges.....	40
Balancing a Combination Job.....	41
The Michigan Stove Company.....	42
Odd Plates.....	42
Annual Outing of the Chicago Retail Hardware Association.....	43
The Gem Stove Pipe Damper. Illustrated.....	43
The Care of Prices, Quotations and Catalogues. Illustrated.....	44
Never-Burn Drip Pan. Illustrated.....	45
The Perfection Fruit Jar Wrench and Perfection Jar Holder. Illus.	45
Aluminum Dipping and Plating Baskets. Illustrated.....	45
An Effective Window Display.....	45
Putting Up Galvanized Iron Cornices. Illustrated.....	46
Sheet Metal Panels in Marble Finishes. Illustrated.....	47
National Association of Master Composition Roofers.....	47
The Sharon Tin Plate Mills.....	48
Kennedy's Patent Double Sreamer. Illustrated.....	48
Canonsburg Steel & Iron Works.....	48
The Centennial Rain Water Cut Off. Illustrated.....	48
Peck, Stow & Wilcox Company.....	48
The Niagara Power Groover. Illustrated.....	49
New Black Plate Process.....	49
The Tin Plate Vote.....	49
Flashings.....	49
Death of Christian Off.....	50
The Liberty Lantern. Illustrated.....	50
The Eastern Trade Golf Association.....	51
Gas Governors.....	51
Boilers and Radiators.....	51
The Vacuum System of Steam Heating. Illustrated.....	52
Where Buffalo Fans and Engines Go.....	53
Annual Meeting of the International Acetylene Association.....	53
Lighting Country Homes.....	53
Piping Materials for Steam Plants.....	54
Problems the Plumber Must Solve. Illustrated.....	55
New York City Notes.....	55
Heating and Plumbing Notes.....	56
New Firms and Changes.....	57
Dudly's Combination Wrench. Illustrated.....	57
The Letter Box—	
Patterns for a Concave Furnace Top. Illustrated.....	58
Boiler Too Low.....	58
Retinning a Soup Kettle.....	58
Piping for High Pressure Steam.....	59
Rusting of Galvanized Iron Roof.....	59
Bursting Seams in Gutter.....	59
The Ventilation of Subways.....	59
Trade Report—	
Market Summary.....	60
Metal Market.....	60
The Pig Iron Market.....	60
Chicago Report.....	61
The Hardware Trade.....	62
Notes on Prices.....	62
Trade Notes.....	62
New Publication.....	63
Metal and Miscellaneous Prices.....	64
Labor Exchange—	
Help and Situations Wanted.....	68

ROOFING SUPPLIES, METALS, TIN PLATES, &c.

REVISED AUGUST 7, 1902.

Aluminum—			
No. 1 Aluminum (guaranteed over 99% Pure), in ingots for remelting.			
Small lots.....	lb.	37¢	
100-lb. lots.....	lb.	35¢	
Aluminum Sheet, B. & S. gauge.			
In lots of 50 lbs or more.			
Wider than.....	6-in.	14-in.	24-in.
And including.....	14-in.	24-in.	30-in.
	lb.	lb.	lb.
Nos. 13 to 19.....	\$0.42	\$0.44	\$0.47
" 20.....	.44	.46	.49
" 21 to 23.....	.46	.48	.51
" 24.....	.48	.50	.53
" 25.....	.47	.51	.54
" 26.....	.47	.54	.59
" 27.....	.48	.57	.62
" 28.....	.48	.57	.64
" 29.....	.49	.60	.69
" 30.....	.50	.64	.77

Note.—Lots of less than 50 lbs 5¢ lb extra.

Antimony—			
Cookson.....	lb.	10¢	10¢
Balclutha.....	lb.	85¢	85¢
U. S.....	lb.	85¢	85¢

Brass, Roll and Sheet..... 30%

Conductors—

Corrugated.

Round or Square.—

Galvanized 1/2 or more, N. & S. d..... 75%

Not Nested..... 70% & 12%

Plain Round, 1/2 or more..... 75%

Nested..... 70% & 12%

Galvanized, Plain Round, Not Nested..... 70% & 12%

Spiral Lock Seam Pipe—

Galvanized..... 60% & 60% & 10%

Spiral Riveted.

Galvanized..... 40%

See also Elbows and Shoes; Eave Trough Mitters; Strainers, Conductor.

Conductor Strainers—

See Strainers, Conductor

Copper—

Lake Ingot..... 13 @ 13 1/4

Casting..... 12 1/2 @ 12 1/4

Sheet and Bolt..... 18 1/2 @ 18 1/4

Cold Rolled Sheets..... 19 1/2 @ 19 1/4

Cold Rolled and Polished Sheets..... 20 1/2 @ 20 1/4

Planished Sheets..... 21 1/2 @ 21 1/4

Bottoms, Pits and Flats..... 22 1/2 @ 22 1/4

Eave Trough Galvanized

Territory..... L. C. L.

Eastern..... 80%

Central..... 75% & 17 1/2

Southern..... 75% & 17 1/2

S. Western..... 75% & 17 1/2

Terms, 2% for cash.

Eave Trough Mitters—

Lap or Slip Joint..... list, 25%

Elbows—Plain Adjustable—

Eastern List.

Tin..... 30%

Galvanized..... 30%

Perfect Elbows..... 40%

Stove Pipe—

Four-Piece

4 1/2 5 5 1/2 6-Inch.

No. 1 \$0.80 .85 .90 1.00 1.05 per doz.

No. 2 .65 .70 .75 .80 .85

No. 3 .60 .63 .65 .70 .80

Elbows and Shoes—

Galvanized..... 60%

Casoline—

See Petroleum Products.

Iron, Sheet—Black.

One Pass, C. R.			
Soft Steel.			
R. G. Cleaned.			
Nos. 14 to 16.....	lb.	3.30	3.35
Nos. 18 to 21.....	lb.	3.40	3.45
Nos. 22 to 24.....	lb.	3.50	3.55
Nos. 25 and 26.....	lb.	3.60	3.65
No. 27.....	lb.	3.70	3.75
No. 28.....	lb.	3.80	3.85

Russia, Planished, &c.

Genuine Russia, accord-

ing to assortment..... lb 11 @ 14

Do, Stained..... 6 @ 10 1/2

Patent Planished, lb A, 11¢; B, 10¢ net

Galvanized.

Nos. 14 and 16..... 3.45 @ 3.50

Nos. 18 and 20..... 3.70 @ 3.80

Nos. 22 and 24..... 4.00 @ 4.10

No. 26..... 4.25 @ 4.40

No. 27..... 4.55 @ 4.70

No. 28..... 4.85 @ 5.00

No. 30..... 5.00 @ 5.20

No. 20 and lighter, 36 inches wide, 25¢ higher.

Lead—

American Pig..... 4.45 @ 4 1/2

Bar..... 5 @ 5 1/2

Pipe..... 6 1/2 @ 6 1/2

Tin Lined Pipe..... 12 1/2 @ 12 1/2

Sheet Lead..... 7 1/2 @ 7 1/2

Old Lead in exchange, 3 1/2 @ 3 1/2

Mitres Eave Trough—

See Eave Trough Mitters.

Nickel—

Per lb..... 55 @ 60

Paints, Oils &c.—

Leads—

Lead, American White, in Oil:

Lots of 500 lb or over..... 6 1/4 @ 6 1/4

Lots less than 500 lb..... 6 1/2 @ 6 1/2

Lead, White, in oil, 25 lb tin

pails, add to keg price..... @ 1/2

Lead, white, in oil, 12 1/2 lb tin

pails, add to keg price..... @ 1

Lead, White, in oil, 1 to 5 lb as-

sorte tins, add to keg price..... @ 1 1/2

Lead, White, Dry in bbls..... 5 1/4 @ 6

Lead, Red, bbls, 1/2 bbls, and kegs:

Lots 500 lb or over..... @ 6

Lots less than 500 lb..... @ 6 1/2

Oils—

Linseed, City, raw..... lb gal. 68 @ 68 1/2

Linseed, City, boiled..... 70 @ 70 1/2

Linseed, State and West'n, raw..... 67 @ 67 1/2

Spirits Turpentine—

In Southern bbls..... 47 @ 47 1/2

In machine bbls..... 47 1/2 @ 49

Putty—

In bulk..... \$2.25

In bladders..... 2.25

In cans 12 lb to 25 lb..... 2.25

In cans 1 lb to 5 lb..... 3.25

Petroleum Products—

In Barrels (Barrel Included)

Stove Gasoline..... lb gal. 1 1/4 @ 11 1/2

Kerosene..... lb gal. 12 @ 13 1/2

Pipe, Block Tin—

Per lb..... 37 1/2

Pipe Drain—

..... 40%

Pipe, Spiral—

See Conductors.

Registers—

List Sept. 2, 1901.

Black Japaned..... 70%

White Japaned..... 70%

Nickel Plated..... 70%

Bronze Finishes in Imitation of Gold.

Silver, Copper or Bronze..... 70%

Electroplated in Brass, Bronze or

Copper..... 70%

White Porcelain..... 60%

Solid Brass and Bronze Metal..... 50%

Roofing Material—

1 Ply Tarred Paper, lb ton, \$31.00 @ 32.00

2 Ply Tarred Paper, lb roll, 108 sq. ft. 55 @ 60

3 Ply Tarred Paper, lb roll, 108 sq. ft. 80 @ 85

Slater's Felt..... lb ton, \$35.00 @ 36.00

Roofing Pitch..... lb bbl. \$2.50

Rosin—

Common and Good—Strainer.

Rosin, C. & D..... lb bbl. \$1.57 @ \$1.60

Rosin, E. & F..... lb bbl. 1.85 @ 1.72 1/2

Rosin, G. & H..... lb bbl. 1.75 @ 1.90

Rosin, I. & K..... lb bbl. 2.35 @ 3.00

Rosin, M. & N..... lb bbl. 3.35 @ 3.70

Shoes and Elbows—

See Elbows and Shoes.

Slate Roofing—

I. O. B. cars, Quarry Station.

According

to size.

Pennsylvania:

Best Bangor, lb sqr..... \$3.75 @ \$6.10

No. 1 Bangor Ribbon, lb sqr 3.50 @ 3.75

Pen Argyle, lb sqr..... 3.50 @ 4.50

Peach Bottom, lb sqr..... 5.25 @ 6.35

No. 1 Chapman, lb sqr..... 3.75 @ 4.75

No. 1 Penna. "lack, lb sqr 3.15 @ 4.15

Unfading Washington Ban-

cor, lb sqr..... 3.00 @ 4.50

Vernon:

No. 1 Sea Green, lb sqr..... \$2.25 @ \$3.50

Purple, lb sqr..... 4.50 @ 5.00

Unfading Green, lb sqr..... 4.25 @ 5.25

Rel. lb sqr..... 7.00 @ 11.00

Maine:

Brownville, Unfading Black.

No. 1, lb sqr..... \$5.25 @ 7.50

Solder—

1/2 lb guaranteed..... 19 1/4 @ 19 3/4

No. 1..... 18 1/4 @ 18 3/4

Prices of Solder indicated by private

brands vary according to composition.

Soldering Fluids—

Per Pound.

Smaller

Barrels Q'tities

Concentrated Flux..... 4c 5c

Eureka Flux:

Triple Strength..... 3c 3 1/2c

Extra Concentrated..... 4 1/2c 5c

Crystal..... 7c

Gedney's Fluid..... 2c 2c

Lennox Fluid..... 2c 3c

Perfection Flux..... 3c 3 1/2c

Yager's Salts, 1 lb. bottles..... each, 50¢

1 lb. bottles, per lb., 45¢

Soldering Coppers—

Per lb..... 22 @ 24

Spelter—

Western Spelter..... 6 @ 6 1/2

Spiral Pipe—

See Conductors.

Stove Pipe Elbows—

See Elbows, Stove Pipe.

Stove Trucks—

See Trucks, Stove.

Strainers, Conductor—

Galvanized..... 50%

Tin Pigs and Bars—

Banca, pigs, lb..... 29 1/4 @ 29 1/2

Straits, pigs, lb..... 29 1/4 @ 29 1/2

Straits, lb bars, lb..... 30 1/4 @ 30 1/2

Tin Plates American

Charcoal Plates, Bright—

N. B.—The price of 20 x 28 sizes

double the price of 14 x 20.

Calland Grade:

IC, 14 x 20..... \$6.75

IX, 14 x 20..... 8.25

IXX, 14 x 20..... 9.50

IXXX, 14 x 20..... 10.75

IXXXX, 14 x 20..... 12.00

Melny Grade:

IC, 14 x 20..... 6.25

IX, 14 x 20..... 7.75

IXX, 14 x 20..... 9.00

IXXX, 14 x 20..... 10.25

IXXXX, 14 x 20..... 11.50

Allaway Grade:

IC, 14 x 20..... 5.75

IX, 14 x 20..... 6.85

IXX, 14 x 20..... 7.95

IXXX, 14 x 20..... 9.05

IXXXX, 14 x 20..... 10.15

Coke Plates, Bright—

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Beckwith, P. D., Est. of.... 2	Drels, Andrews & Krump.... 83	Janney, Steinmetz & Co.... 73	Osborn, J. M. & L. A..... 77	Swett, A. L. Iron Works.... 21
Berger Bros. Co..... 74	Drouve, G. Co..... 81	Jenkins Bros..... 1	Ostrand, W. R. & Co..... 79	Taylor & Boggis Fdry. Co... 23
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Bliss, E. W. Co..... 82	Energy Elevator Co..... 71	Kemp, C. M. Mfg. Co..... 31	Penn Metal Ceiling & Roofing Co..... 73	Triumph Adjustable Stove Pipe Mfg. Co..... 26
Blodgett, G. S. Co..... 21	Evans Stamping & Plating Co 23	Kewanee Boiler Co..... 15	Perkins, J. L. & Co..... 71	Troy Nickel Works..... 28
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STEEL, IRON, COPPER, ZINC, BRASS, TIN,
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PERFORATED AS REQUIRED
FOR
GRAIN CLEANING AND MINING MACHINERY,
WOOLLEN, COTTON, PAPER AND PULP MILLS,
RICE, FLOUR AND COTTON SEED OIL MILLS,
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Barstow Stove Co., Providence, R. I.
Beckwith, P. D., Est. of, Dowagiac, Mich.
Berkstrom Bros. & Co., Neenah, Wis.
Bonnot Co., Canton, O.
Boynton Furnace Co., 207 Water St., N. Y.
Brand Stove Co., Milwaukee, Wis.
Brien Heater Co., Hoosick Falls, N. Y.
Cory, Uzal & Co., 210 Water St., N. Y.
Dighton Furnace Co., Taunton, Mass.
Floyd, Wells & Co., Roversford, Pa.
Forest City Fdry. & Mfg. Co., Cleveland, O.
Graff Furnace Co., 208 Water Street, New York.
Hart & Crouse Co., Utica, N. Y.
Howes, S. M. Co., Boston, Mass.
International Heater Co., Utica, N. Y.
Kelsey Heating Co., Syracuse, N. Y.
Lennox Manufacturing Co., Marshalltown, Iowa.
Mazee Furnace Co., Boston, Mass.
Meyer, F. & Bro. Co., Peoria, Ill.
Moncrief Furnace & Fdry Co., Atlanta, Ga.
Mueller, L. J. Furnace Co., Milwaukee, Wis.
Patric Furnace Co., Springfield, O.
Peck Williamson Co., Cincinnati, O.
Richmond Company, Norwich, Conn.
Schwah, R. J. & Sons Co., Milwaukee, Wis.
Shepard, Isaac A. & Co., Phila., Pa.
Stamford Foundry Co., Stamford, Ct.
Tubular Heating and Ventilating Co., Phila., Pa.
Utica Heater Co., Utica, N. Y.
Walker & Pratt Mfg. Co., Boston, Mass.
Wood & Bishop Co., Bangor, Me.
- Gas Heaters. (See Stoves and Ranges, Gas.)**
- Gas Machines.**
Kemp, C. M. Mfg. Co., Baltimore, Md.
- Granite Steel Ware.**
National Enameling & Stamping Co., 78 Beekman St., N. Y.
- Groovers.**
Wheeler, W. A., Indianapolis, Ind.
- Gutter Formers.**
Double Truss Cornice Brake Co., Buffalo, N. Y.
- Heaters, Steam and Hot Water.**
American Radiator Co., Chicago, Ill.
Barstow Stove Co., Providence, R. I.
Boynton Furnace Co., 207 Water St., N. Y.
Dighton Furnace Co., Taunton, Mass.
Drake, W. H., Newark, N. J.
Gorton & Lidgerwood Co., 96 Liberty St., New York.
- Gurney Heater Mfg. Co., Boston, Mass.**
- Hart & Crouse Co., Utica, N. Y.**
- International Heater Co., Utica, N. Y.**
- Kewanee Boiler Co., Kewanee, Ill.**
- Mazee Furnace Co., Boston, Mass.**
- Mueller, L. J. Furnace Co., Milwaukee, Wis.**
- National Pipe Bending Co., New Haven, Conn.**
- Pierce, Butler & Pierce Mfg. Co., Syracuse, N. Y.**
- Richmond Company, Norwich, Conn.**
- Sheppard, Isaac A. & Co., Phila., Pa.**
- Smith, J. B. Co., Westfield, Mass.**
- Smith & Anthony Co., Boston, Mass.**
- Smith & Thayer Co., Boston, Mass.**
- Stolz, Frank D., Chicago, Ill.**
- Swett, A. L. Iron Works, Medina, N. Y.**
- Utica Heater Co., Utica, N. Y.**
- Walker & Pratt Mfg. Co., Boston, Mass.**
- Heating System, Vacuum.**
Trane, J. A. Vacuum Heating Co., Chicago.
- Hollow Ware.**
Lalace & Grosjean Mfg. Co., 19 Cliff St., New York.
National Enameling & Stamping Co., 78 Beekman St., N. Y.
Sperry, D. R. & Co., Batavia, Ill.
- Hotel Cooking Apparatus.**
Smith & Anthony Co., Boston, Mass.
- Household Specialties.**
Shepard, Sidney & Co., Buffalo, N. Y.
- Hydraulic Rams.**
Kline, J. M., Beavertown, Pa.
- Iron, Galvanized Sheet. (See Sheets, Galvanized.)**
- Iron and Steel, Sheet. (See Sheets, Iron and Steel.)**
- Iron, Planished Sheet.**
Amer. Sheet Steel Co., New York.
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Dietz, R. E. Co., 99 Light St., N. Y.
Vogel, Wm. & Bros., Brooklyn, N. Y.
- Lath, Metallic.**
Schratwiesers Metal Lath Works, Brooklyn, N. Y.
- Lead Pipe.**
Colwell Lead Co., 68 Centre St., N. Y.
- Lead Pipe Couplings.**
Anderson Coupling Co., Portland, Ct.
- Lead Washers.**
Littleford Bros., Cincinnati, O.
- Lightning Rods.**
Washburn, E. G. & Co., 46 Cortlandt St., N. Y.
- Mercury Seal.**
Trane, J. A. Vacuum Heating Co., Chicago.
- Metal Ceilings. (See Ceilings, Metallic.)**
- Mica.**
Munsell, Eugene & Co., 218 Water St., New York.
Ohio Mica Co., Canton, Ohio.
Rutland Fire Clay Co., Rutland, Vt.
- Milk Cans.**
National Enameling & Stamping Co., 78 Beekman St., N. Y.
- Nickel Plating Outfits.**
Hanson & Van Winkle Co., Newark, N. J.
Zucker & Levett & Loeb Co., 526-530 W. Twenty-fifth St., New York.
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Gobelle Pattern Co., Cleveland, Ohio.
Gray, G. L., Galesburg, Ill.
Vedder Pattern Wks., Troy, N. Y.
- Perforated Sheet Metal.**
Harrington & King Perforating Co., Chicago, Ill.
- Pig Iron.**
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Saunders, D. Sons, Yonkers, N. Y.
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Callahan, Geo. & Co., 218 Front Street, N. Y.
- Pipe, Water and Gas.**
Millar, C. & Son Co., Utica, N. Y.
- Plumbers' Tools, Specialties and Supplies.**
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Portsmouth Stove & Range Co., Portsmouth, O.
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Ringen Stove Co., St. Louis, Mo.
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Stamford Foundry Co., Stamford, Ct.
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Ringen Stove Co., St. Louis, Mo.
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Kemp, C. M. Mfg. Co., Baltimore, Md.
Wind Gates.
Miner & Peck Mfg. Co., New Haven, Ct.

SEE ALPHABETICAL INDEX PAGE 65.

THE METAL WORKER.

With which is Incorporated The Stove and Tin Trade Journal, The Sheet Metal Builder, and Metal.

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First-class TINSMITH and FURNACE-MAN; one experienced in blow piping preferred; must be a strictly first-class hand and must thoroughly understand his business; good wages and steady job. "Virginia," care *The Metal Worker*, New York. Aug. 9

A good PLUMBER who understands tin work; steady position. G. L. Swift & Sons, Marathon, N. Y. Aug. 9

SALESMEN to handle as a side line the highest grade and most up to date range made; something new and attractive and will not conflict with your present line of ranges. For particulars address "High Grade Range," care *The Metal Worker*, 1205 Chemical Building, St. Louis, Mo. Aug. 9

A first-class PLUMBER; steady work; good wages to an expert, reliable hand; must be nonunion. "Atlantic," care *The Metal Worker*, New York. Aug. 9

A good TINNER; steady work; must have had experience in general jobbing; references required. Reply by letter to F. Rhullig, care *The Metal Worker*, 1205 Fisher Building, Chicago, Ill. Aug. 9

Two experienced SALESMEN to handle the Home Pride malleable steel range to the trade; this range has been on the market for ten years, and at this time is handled exclusively by the trade; none but experienced men in handling trade ranges are wanted. The Economist Range Company, Marlon, Ind. Aug. 9

At once, a good all around TINSMITH for inside and outside work. J. E. Doolittle, Ellicottville, N. Y. Aug. 9

Twenty TINNERS and CORNICE MAKERS. Apply to W. H. Mullins, Salem, Ohio. Aug. 9

A dozen to fifteen good MOLDERS. Danville Store Company, Danville, Pa. Aug. 9

A steady, reliable FURNACEMAN and SHEET METAL WORKER; quick and first-class; must be temperate and reliable; state age, experience and references. "Heating," Nashua, N. H. Aug. 9

At once, a good, all around TINNER and PLUMBER; married man preferred; steady work every day in the year; must be sober and steady; wages, \$2.50 per day. Geo. W. Glibney, Pawling, N. Y. Aug. 9

A good TINNER, SLATER and FURNACE-MAN; steady job. 207 Court street, Hamilton, Ohio. Aug. 9

TINSMITH; must be first-class furnace-man and thoroughly familiar with all branches of the business; steady job to good man; no other need apply; state wages and experience. Alex. Cameron, Southampton, L. I. Aug. 9

At once, first-class TINSMITH and FURNACEMAN; must be strictly temperate and reliable; steady job the year round to a good man; location near Albany, N. Y. "Tinsmith," care *The Metal Worker*, New York. Aug. 9

METAL STAMPER. "M. S.," care *The Metal Worker*, New York. Aug. 2

All around TINNER and CORNICE WORKER; state wages wanted. Chas. F. Hauck & Co., 35 West Main street, Springfield, Ohio. Aug. 2

First-class MECHANIC, experienced in galvanized iron, cornice and blow pipe work. John H. Sharer, 1606 and 1608 Cherry street, Toledo, Ohio. Aug. 2

A good cornice and skylight maker as FOREMAN who is a good cutter and can estimate on work from plans, and who can take full charge of shop, including the roofing line if required to do so; must not be afraid of work; no need to belong to union; a good job for the right man. "Employer," care *The Metal Worker*, New York. Aug. 2

First-class CUTTER on cornice work. M. F. Westergren, 433 East 144th street, New York. Aug. 2

A young man of good address, preferably having some acquaintance with architects and builders in New York city, to solicit opportunity to estimate on plumbing work; one who can secure interviews with leading men and arrange for bids to be submitted; knowledge of the details of plumbing unnecessary; good connection with house of good reputation open to one having the right qualifications. "Sanitarian," care *The Metal Worker*, New York. Aug. 2

A young man who has had experience in designing and estimating on heating and ventilating apparatus of the better class in New York can secure position with an established house; good address, some acquaintance with the architects and ability to secure plans for bidding, desirable qualifications; a good opportunity for an ambitious, energetic man of good education and presence. "Selling Engineer," care *The Metal Worker*, New York. Aug. 2

At once, first-class TINSMITH, having had experience in heavy galvanized iron work; must be strictly sober and reliable; steady job all year to a good man. T. E. Newman, Johnstown, Pa. Aug. 2

Four good CORNICE and SKYLIGHT WORKERS; eight hours. The G. Drouve Company, Bridgeport, Conn. Aug. 2

SALESMAN acquainted with trade in Atlantic Coast States to sell a line of oil heaters; give experience and reference. "Field," care *The Metal Worker*, New York. Aug. 2

Two first-class TINNERS who can do all kinds of furnace work; state wages; only first-class men need apply. Miller & Miller, Iowa City, Iowa. Aug. 2

First-class PLUMBER; steady work year round; must be good lead worker and sober; none others need apply; references required and state wages. Edgar W. Strong, Smethport, Pa. Aug. 2

At once, a TINNER; steady and good job to the right man; one who can do slating preferred. D. A. Williams, Jefferson, Ohio. Aug. 2

SITUATIONS WANTED.

Excellent SUPERINTENDENT or FOREMAN for cornice, skylight, heating and ventilating work; first-class draftsman; wishes a position in a large shop, where experience, ability and knowledge will be properly rewarded. "Excellent," care *The Metal Worker*, New York. Aug. 9

By a first-class PLUMBER; city or country, best of references given. Edw. Smith, 1835 Third avenue, New York. Aug. 9

By an all around PLUMBER; temperate, honest and reliable; seven years' experience; state wages. "Plumber," P. O. Box 245, Huntington, L. I., N. Y. Aug. 9

PLUMBER wants position, city or country; six years' experience; sober and industrious. "Plumber," 330 Livingston street, Brooklyn, N. Y. Aug. 9

If you are in the plumbing, tinning and heating business and expect a fall trade that would demand another man, it might be to your profit to correspond with me; 18 years' experience and best of reference. "Plumber," 29 S. Main street, Station A, Gardiner, Mass. Aug. 9

TINSMITH, temperate, wishes a situation in the South on dairy and creamery work; age 26 and married. Carlisle W. Madara, 1436 Felton street, South West, Philadelphia, Pa. Aug. 9

A thoroughly experienced and practical HEATING and VENTILATION MAN, fully capable of handling all details connected with office end of business or selling the trade, and familiar with Pacific Coast and Central States territory and slightly acquainted with New England trade, desires position with manufacturing concern. "Boilers and Furnaces," care *The Metal Worker*, New York. Aug. 9

By a man of experience in pattern fitting and in flask making. "F. J.," 211 Orange street, Albany, N. Y. Aug. 9

By a practical PLUMBER and STEAM FITTER with 15 years' experience; can estimate from plans and plan work; capable of doing new work and overhauling old work; a competent lead worker; a hustler and up to date; will go to work one month on trial to demonstrate my ability; correspondence from reliable parties only solicited regarding a steady position. "Competent," care *The Metal Worker*, New York. Aug. 9

By a first-class PLUMBER, GAS and STEAM FITTER; some knowledge of tin work; place of 8000 or 10,000 inhabitants preferred; reliable and strictly temperate; only reliable parties willing to pay expenses need correspond. "R. H. C.," care *The Metal Worker*, New York. Aug. 9

By a first-class, all around TIN and SHEET IRON WORKER; 14 years' experience in all branches of trade; graduate on architectural sheet metal work; practical mechanic, drafting, cutting and estimating; up to date workman; sober and honest married man, age 34; steady work for one year or more with some good firm; city or country; wages moderate. W. Hartwick, New Egypt, N. J. Aug. 9

As SUPERINTENDENT by a practical man with more than 16 years' experience in manufacturing piece, stamped, machine or hand made tin or sheet iron work, with executive ability for handling labor to advantage. F. W. Miller, 951 W. Franklin street, Baltimore, Md. Aug. 9

A young man, 21 years of age, with two years' experience in the stove business, wishes a position in same line with chance for advancement; A1 reference and bond if required. "J. A. C., Jr.," 1353 Putnam avenue, Brooklyn, N. Y. Aug. 9

As FOREMAN in a pieced tinwork factory; can furnish reference. "Foreman," 311 Cortland avenue, Syracuse, N. Y. Aug. 9

As MANAGER or SALESMAN; well acquainted among the architects, contractors, metal ceiling and kindred trades throughout New England; understands taking off quantities from plans. "C. C.," care *The Metal Worker*, New York. Aug. 9

A young man, 23 years, desires position in hardware store, or with a reliable firm traveling North Carolina, South Carolina and Georgia; can keep ordinary set of books; rapid typewriter, window dresser, and can write advertisements. "R. L. L.," corner Hargett and Harrington streets, Raleigh, N. C. Aug. 9

A young man, 23 years of age, with three years' experience in the stove business, wishes a position in same line with chance for advancement; best reference. "A. A. C.," 1044 Elsmere place, New York. Aug. 2

FOREMAN for cornice and sheet iron work, with all the necessary experience in drafting and cutting, wishes to change his position; only large shops will be taken into consideration. "Real Foreman," care *The Metal Worker*, New York. Aug. 2

By a young man, 33 years of age, practical PLUMBER and GAS FITTER; 18 years' experience at the trade in New York City; can figure from and read plans; position as journeyman or take charge of shop; willing to go anywhere. P. H. Becker, Lillian place and Woodruff street, New York. Aug. 2

By a first-class japanner as FOREMAN; expert color and japan mixer; also can handle cheap help; first-class references; wages, \$18 per week. Box 77, care *The Metal Worker*, 1205 Fisher Building, Chicago, Ill. Aug. 2

A first-class PLUMBER; city or country. "B. W.," 362 Sixth street, Hoboken, N. J. Aug. 2

CHIMNEY MAN with 10 years' experience on rotary ventilators, making and erecting, desires steady position; temperate and reliable. "T. A. G.," 90 Stamford street, Boston, Mass. Aug. 2

By sober, reliable young man, 25 years of age, as PLUMBER and GAS FITTER; some knowledge of hot water heating; good jobber; six years' experience in New York City shop; moderate wages for steady job; state wages. F. R. Penprae, Hillside street, Milton, Mass. Aug. 2

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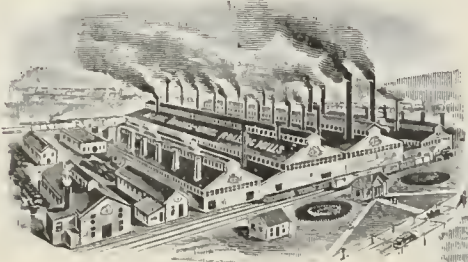
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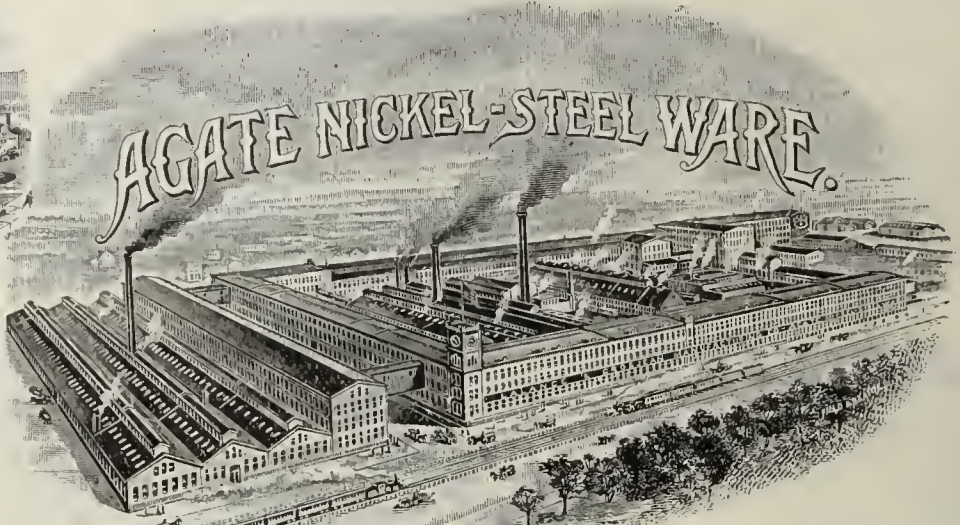
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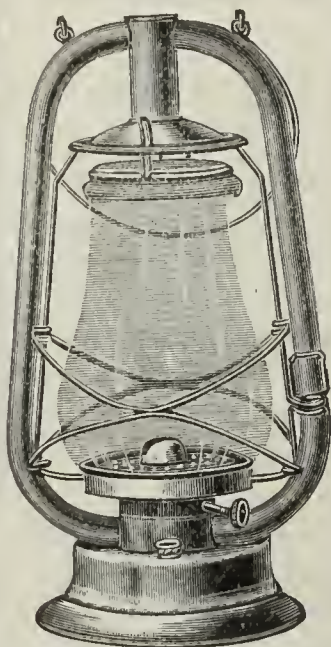
"Well," answered Colonel Stillwell, "I don't know about silence being golden, but I must admit that I know of several people in the mountains who have made considerable money out of a still."—*Washington Post.*

— BAD MEMORY.—"Sailors are awful forgetful, pa, ain't they?" said little Elsie.

"Why do you think so, dear?"
"Because," said she, "they have to weigh the anchor every time they leave port."—*Philadelphia Press.*

— CONTRARY TO SCRIPTURE.—"You are in my pew, sir," said Mr. Upjohn, stiffly.

"Then I am sitting in the seat of the scornful!" replied the stranger, getting out of it with alacrity and taking a seat farther back in the church.—*Chicago Tribune.*



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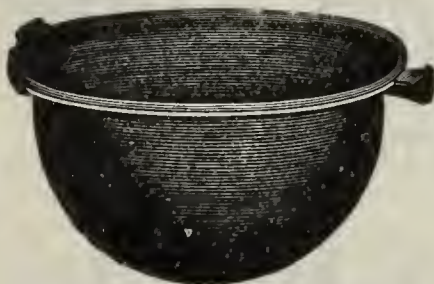
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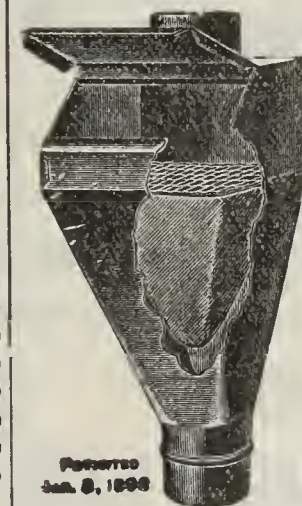
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—RETORT COURTEOUS.—"I never get angry with a fool," remarked a man who wanted to crush his antagonist.

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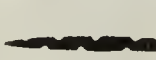
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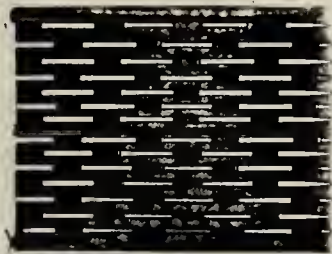
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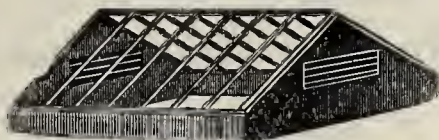
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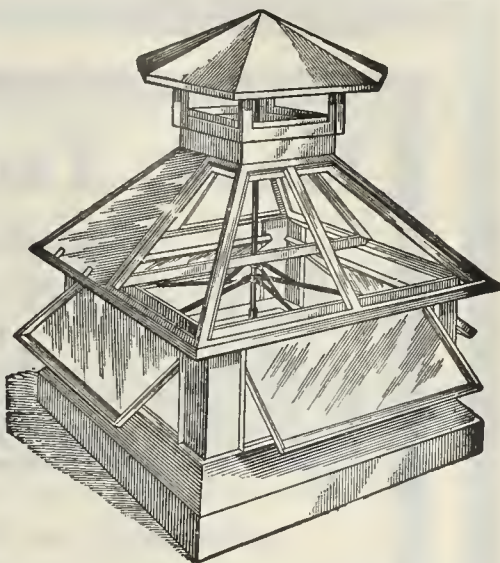


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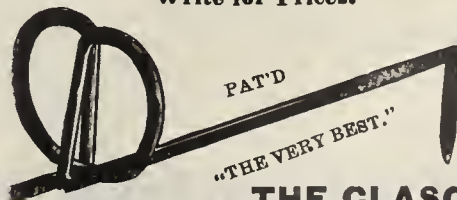
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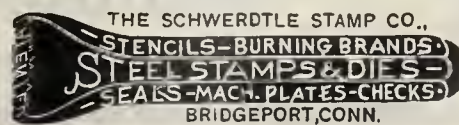
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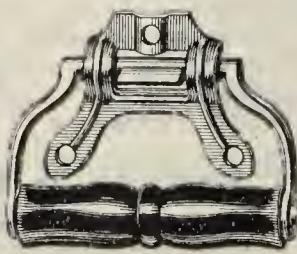
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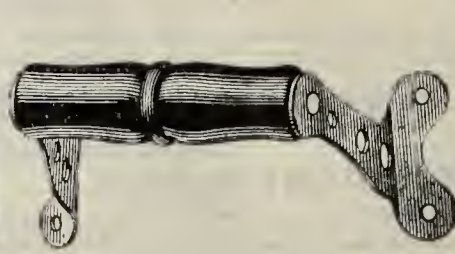
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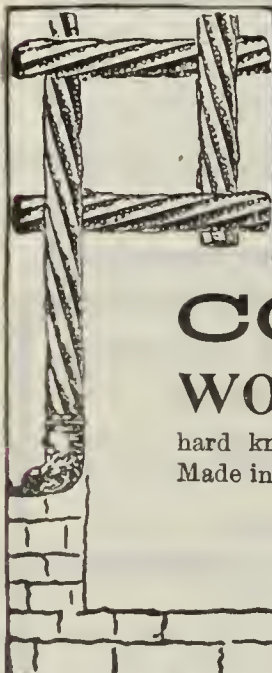
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
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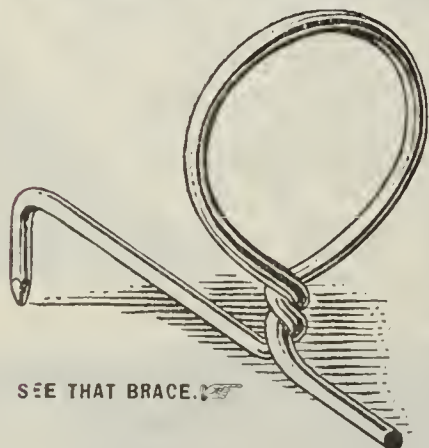
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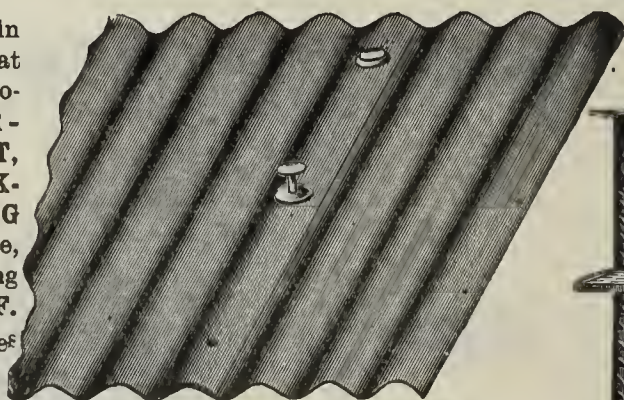
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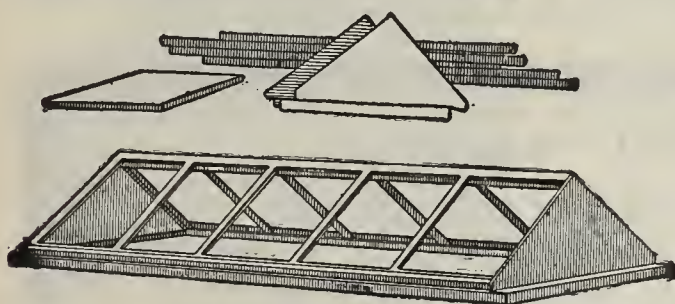
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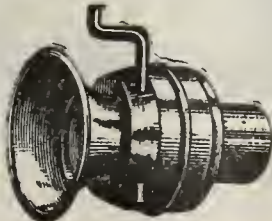
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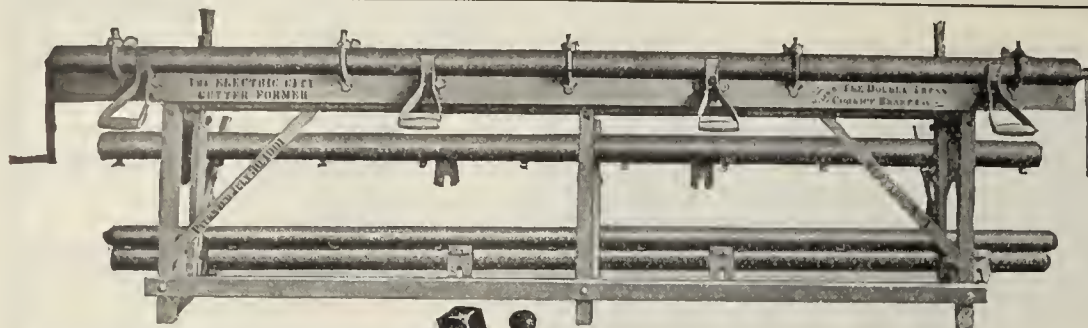
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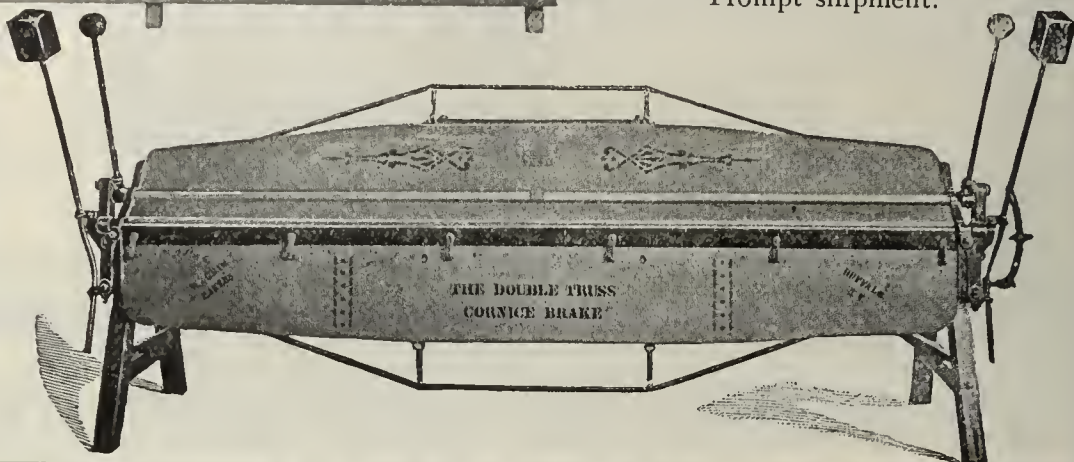
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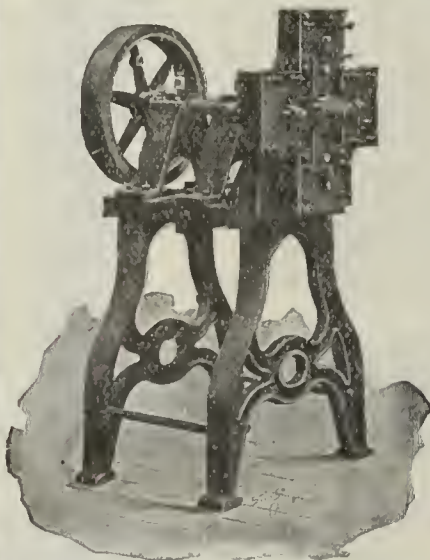
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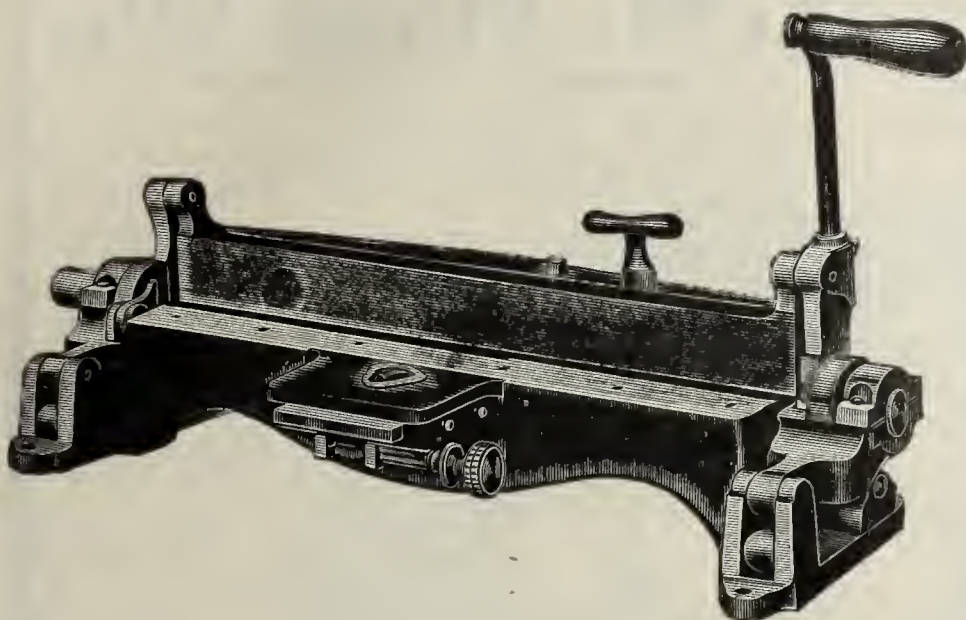
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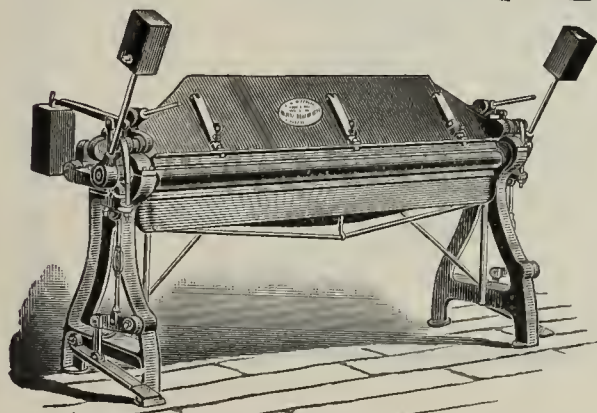
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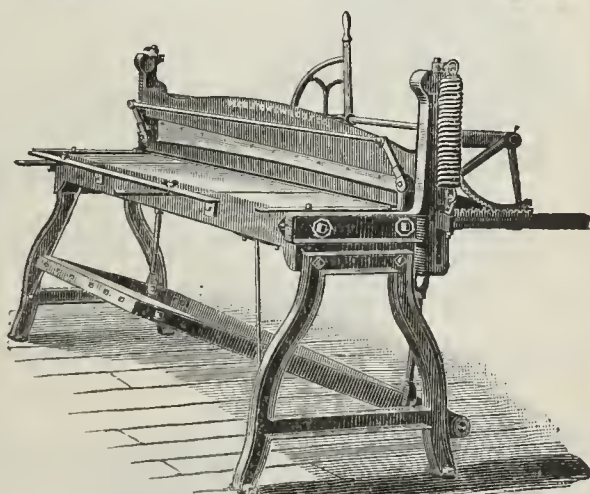
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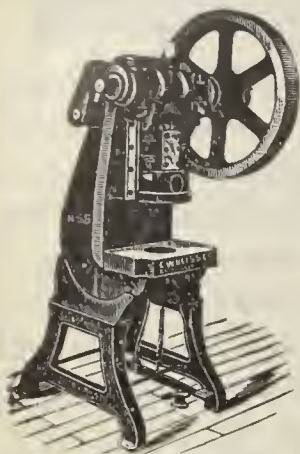


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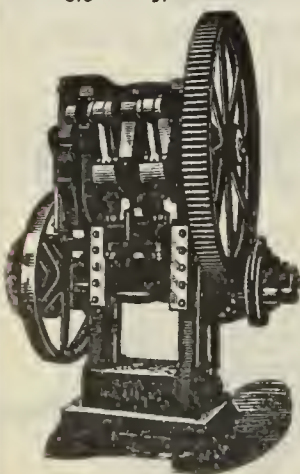
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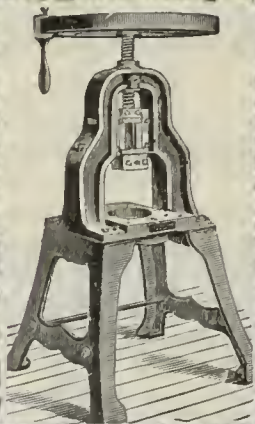
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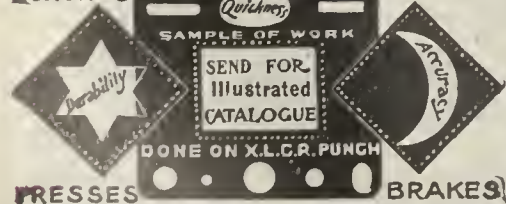
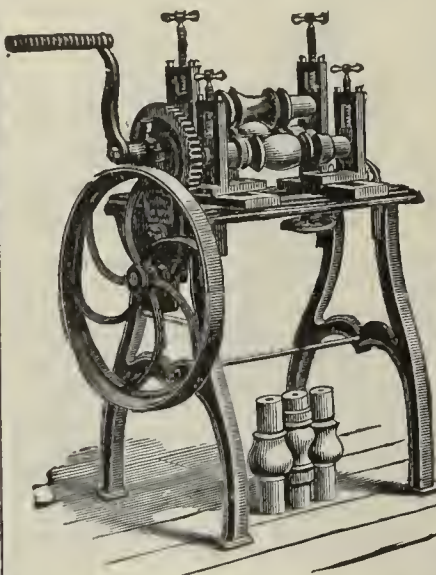
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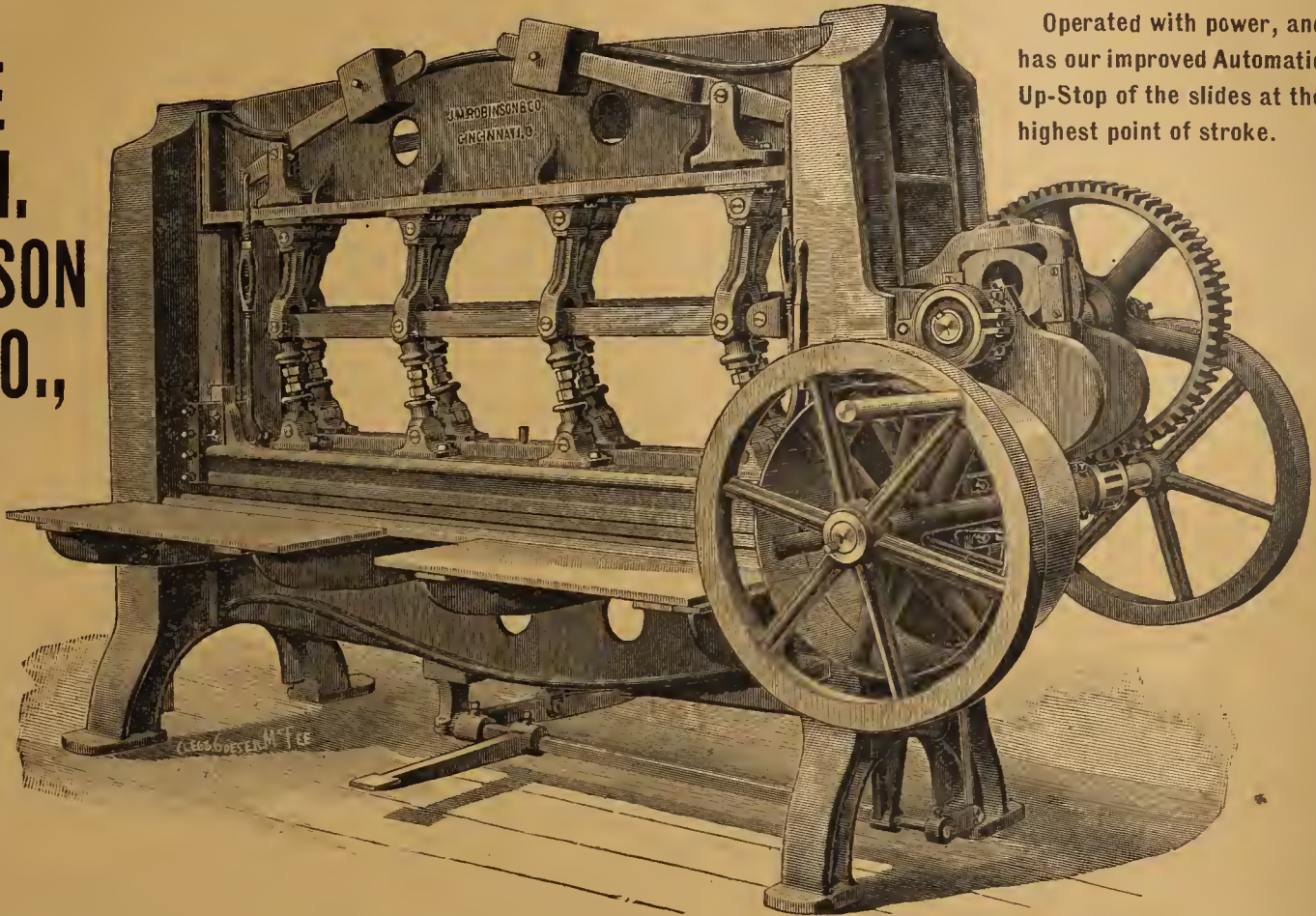
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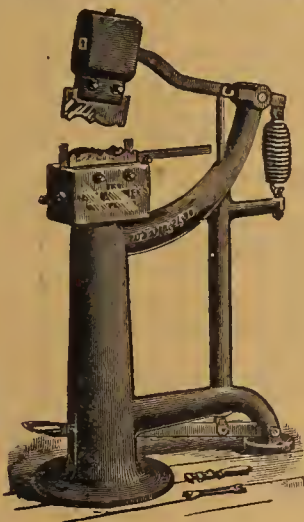
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 NUMBER 7.

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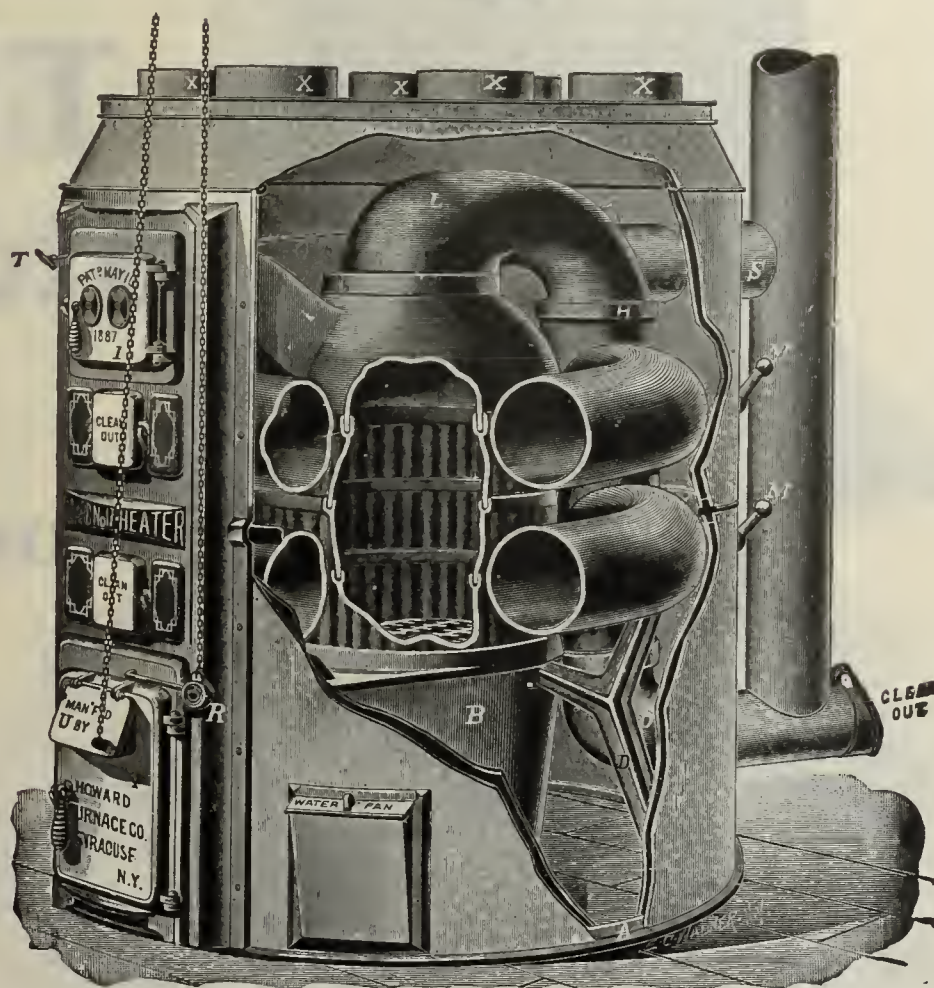
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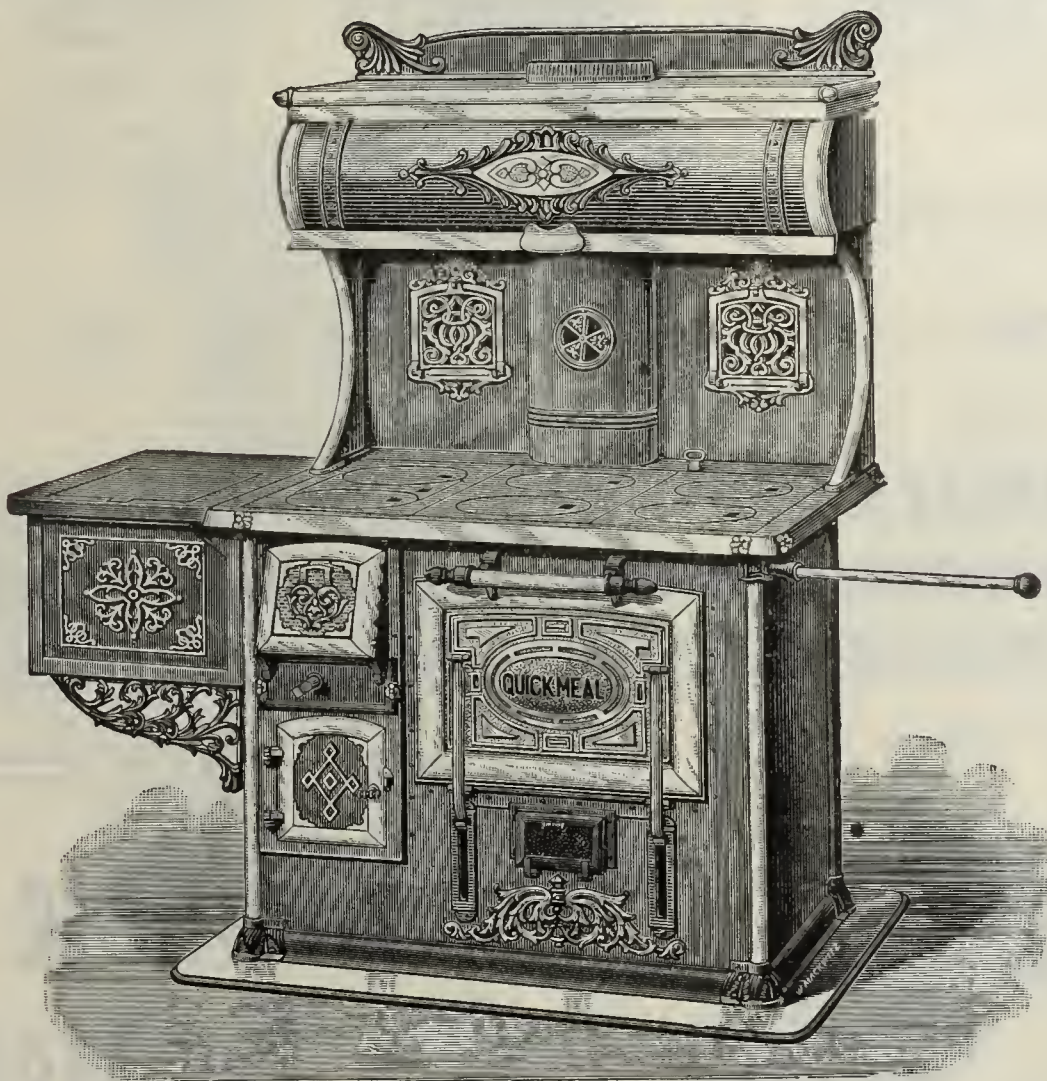
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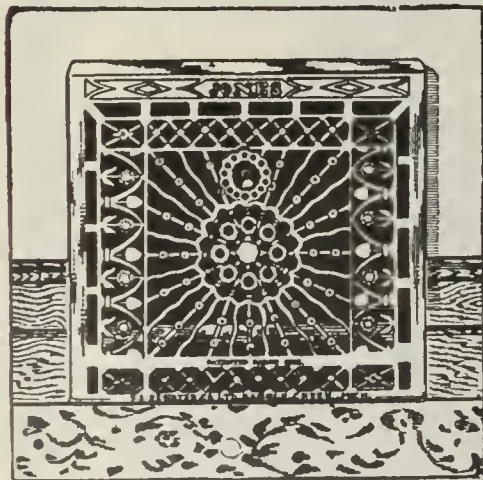
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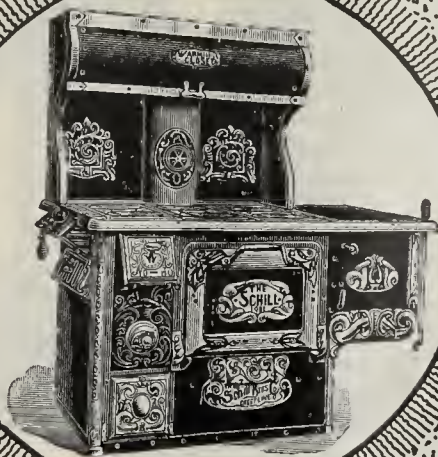
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Patented
DOWN-DRAFT

Oak Stove

A Fuel Saver.

Burns one-half less than
other Hot Blast Stoves.



FIRE POT at top of
stove. Smoke pipe
at base. Heat drawn
to the floor. Fresh fuel
being placed on top of fire,
all gas and smoke are
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Has large ash drawer,
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Most economical
stove on the market, as
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*Double Flue
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Only Double Flue Ranges in the
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The Leading Line of Heating Apparatus.

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HOT AIR.**



WROUGHT STEEL

RANGES

LIKE THE

"PACIFIC"

Are best because they're made stronger, better, more perfect than any other similar construction. You should write for prices and secure our Catalogue.

It is made with High Closet, Rolling Front, Six Holes, for Hard or Soft Coal; is the latest, best and handsomest Steel Range ever offered, one that you can offer as simply "out of sight" compared with that sold by the peddlers. Try it.

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STEAM BOILERS (8 SIZES), 550 SQ. FT. RADIATION SUPPLIED.

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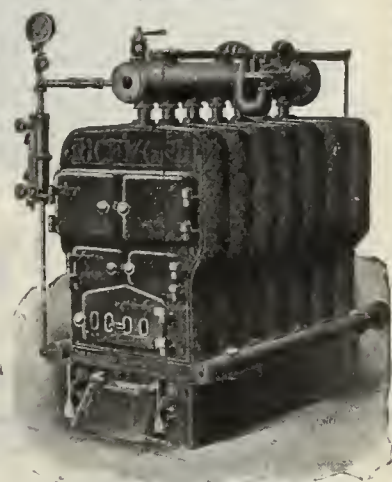
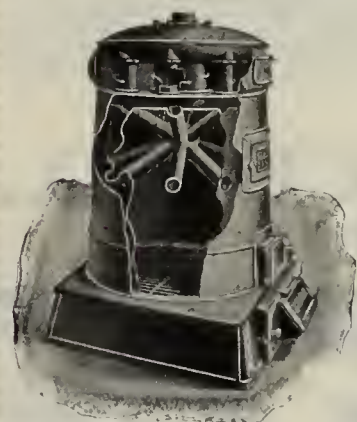
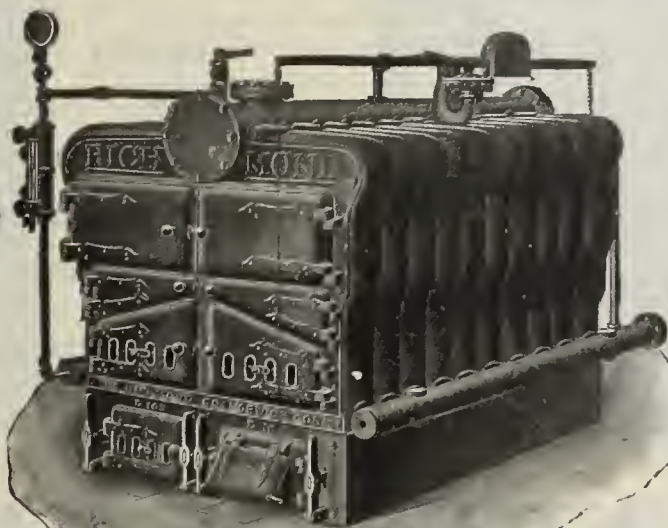
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BOYNTON'S Champion Wood Furnace.



MADE IN 4 SIZES.

Capacity equal to the largest coal furnace. Burns 4 ft. wood and in a wood country it is the thing to use for a school, church or any kind of a building.

Prices on Application.

The BOYNTON FURNACE CO.,
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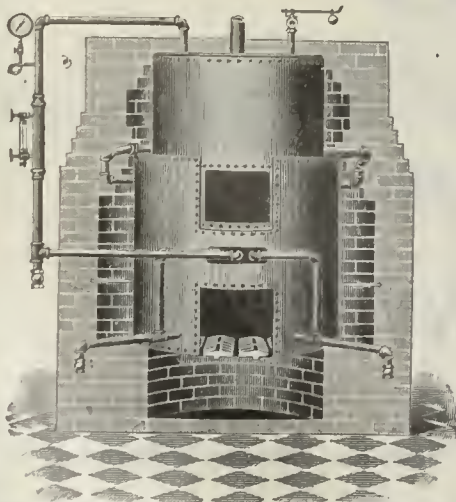
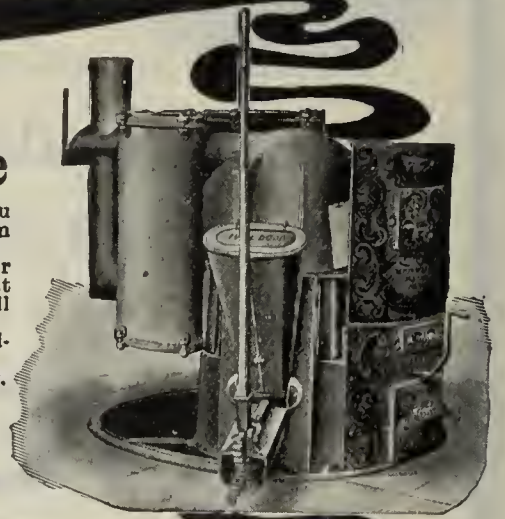
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The Underfeed Furnace consumes less fuel than any other furnace ever built. The coal is burnt more slowly. All the heat units from it, as well as from the smoke, are utilized and all smoke eliminated.

Our handsome booklet explains its splendid heating qualities and coal saving.

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A Steel Brick-Set Boiler for Steam and Water Heating—Hard or Soft Coal.

HAS AN ESTABLISHED REPUTATION.

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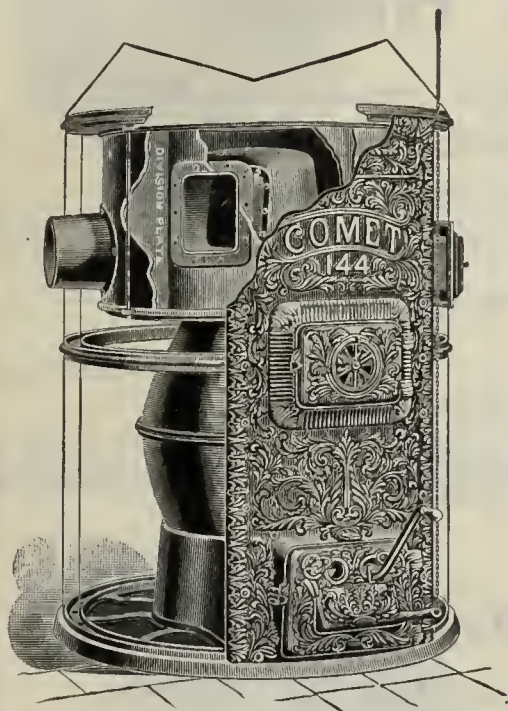
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New York, N. Y.
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THE STAMFORD FOUNDRY COMPANY

SINCE 1830 MAKERS OF CELEBRATED FURNACES, RANGES AND STOVES

THOUSANDS IN USE

RECORD EVERYWHERE ESTABLISHED

References to Many of Our Furnaces, Now and Through Past 25 Years in Continuous Service

COMET
Heavy Steel Drum

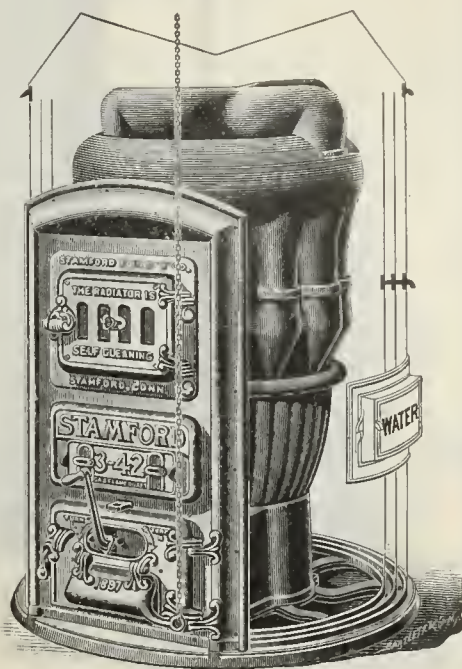
Both furnaces are well made—all exposed parts heavy. *A generation of constant service establishes their record for durability*, economy, powerful heating, easy to set, simple to operate.

The radiator of the STAMFORD ALL CAST FURNACE is a combined dome-tubular and cylinder construction of immense capacity and heating power.

The COMET radiator is made of heavy cold rolled steel. Fire pot and exposed parts especially heavy and durable.

The COMET is made for satisfactory service and not for PRESENT cheapness, ENDING IN EARLY DESTRUCTION.

OUR GUARANTEE follows everything we make, whether stoves, ranges or furnaces, and is established by our over 70 years' record.

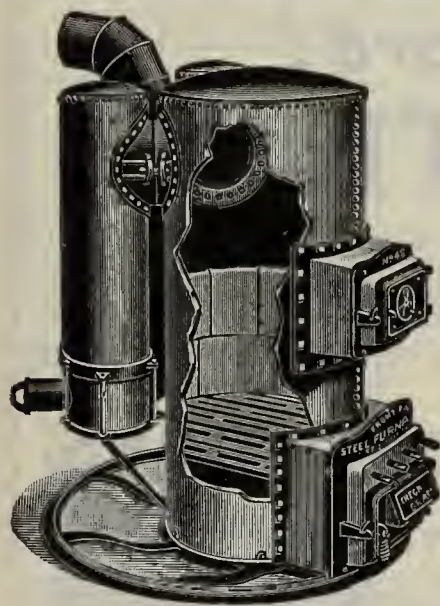


STAMFORD All Cast
Portable or Brick Set

This is the Celebrated American Improved

Send for Catalogue, Capacities and Prices

THE STAMFORD FOUNDRY COMPANY
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Front Rank Hot Air Furnaces

are built on vertical lines; air comes in direct contact with entire heating surface.

The Front Rank Fire Chamber is one solid sheet of closely riveted steel; being lined above the fire lines with genuine fire clay tiling it is the most durable made.

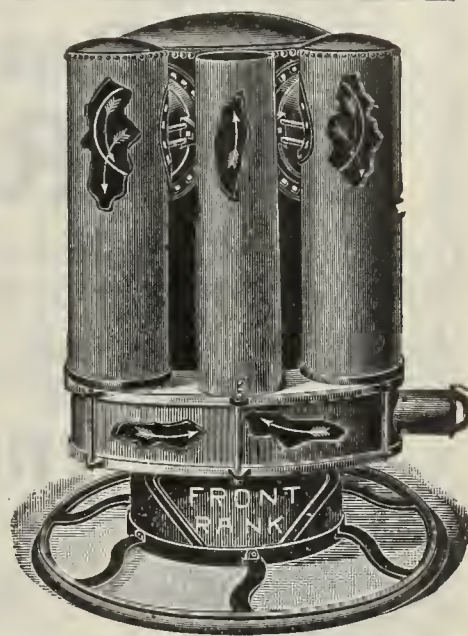
The radiators are very large and have an unusual area of heating surface in comparison with the size of fire pot.

These furnaces burn hard or soft coal or coke. We also make wood burning furnaces.

Send for our catalogue, it will give you a better idea of what we make.

FRONT RANK STEEL FURNACE CO.,

2301 to 2309 Lucas Ave., St. Louis, Mo.



Emperor Furnaces FOR WOOD.

Simple, Safe, Durable.

Economical in Fuel.

The Best and Cheapest Line of Wood Furnaces. . . .

Furnished for either Brick or Galvanized Iron Casing

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Our New Ideal Premier Tank Heater

is now ready for the market, and we invite your critical examination of its various features of construction.

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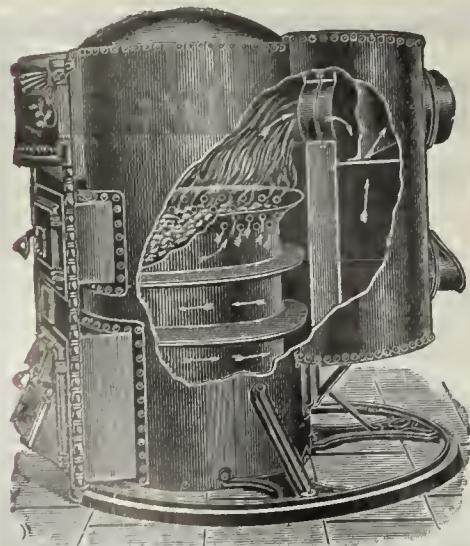
Rear Guard, Forward! SUNRAY HEATERS.

There was a time when the "Sunray" Heater was not so well known. But, nowadays, when a heating man wants to "do himself proud" he always talks "Sunray" to his customer. Why? Simply because he knows they are the best, and acknowledged as such by experts. We charge nothing for the name—that's another good quality. Better write to-day and get prices. You'll not be sorry.

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WEIR ALL STEEL GAS AND SOOT CONSUMING FURNACE.

THE HEAVIEST STEEL FURNACE MADE.

Absolutely gas and dust tight. A great heat-producer but a fuel saver.

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"The Handy Furnace Pipe."

MADE WITH A VIEW OF BEING SAFE.

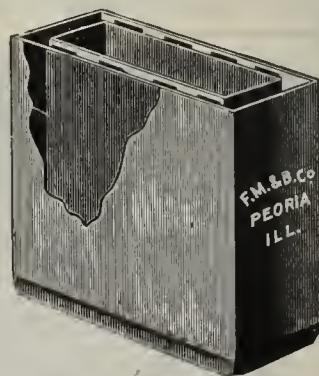
The saving of labor in putting it up really makes it the cheapest hot air pipe on the market.

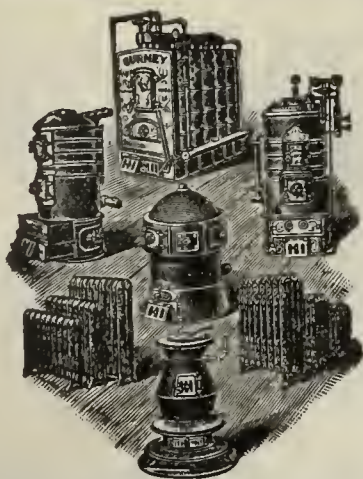
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Perfectly Natural.

A keen observer recently remarked that what displeased him most was to see people try to be what they are not. You're seemingly obliged to sell some apparatus on that basis, but never

"GURNEY" HEATERS,

BRIGHT IDEA, 400 SERIES and DORIC.

You may claim what we claim for them in the fullest confidence. It's never necessary for you to stretch their efficiency, their durability, or their economical fuel consumption. It's never necessary to make any misstatements about their ratings, for each heater is honestly rated and will do exactly what we claim for it. "Gurney" Heaters, by the way, are sold, not on "saying" but on "doing."

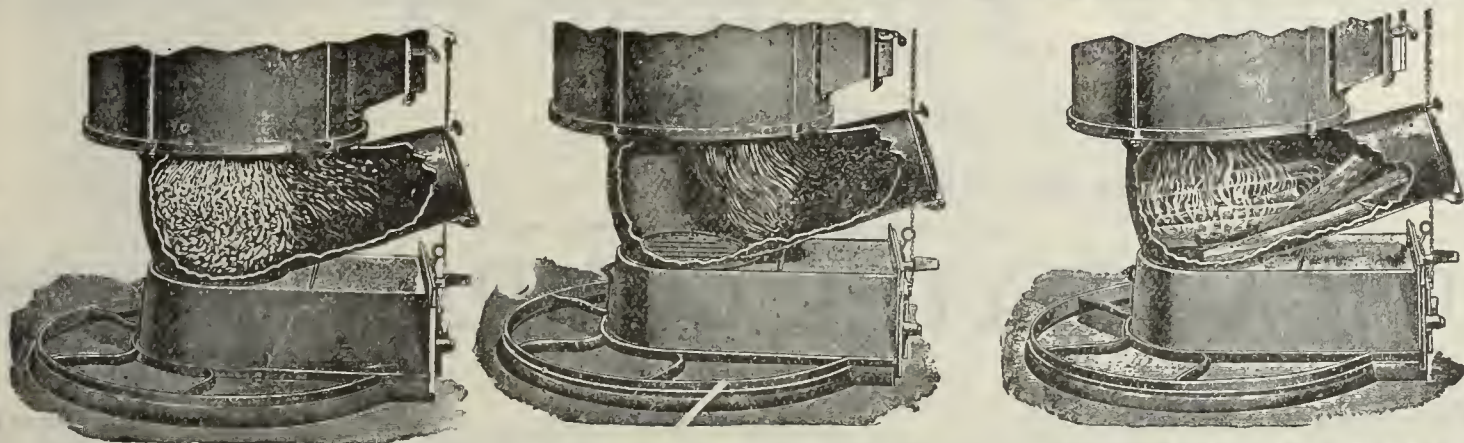
You won't have to look far to find people right in your locality who'll help you sell "Gurney" Heaters by their recommendation of them. Write for latest catalogue and agents' particulars.

Gurney Heater Mfg. Co.,

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THREE PRACTICAL USES

to which the *Combination Fire Bowl* and *Coking Magazine* used on the **PATRIC FURNACE** may be put.

The first cut shows soft coal undergoing coking process in magazine, with coked coal in main bowl. A *great fuel saver*. Second cut illustrates fire carried only in magazine, for light Spring and Fall heating, a *great convenience*. Third illustration shows furnace used for wood. A *success for twenty years*.

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NONE CAN COMPARE

WITH THE

MUELLER Furnaces and Boilers.

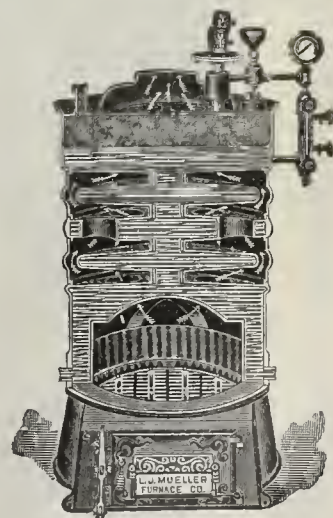
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Heaters in all styles. For all kinds of fuel.

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All Cast Iron Double Radiator.



Established 1857

Everything in the Heating Line.

L. J. MUELLER FURNACE CO.,

180 Reed St.,

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SUPERIOR Furnaces and UTICA Heaters require less care and attention than any other furnace on the market. There is no complicated system of drafts and dampers—merely pulling one chain in the living room will open the drafts, pulling the other chain checks the furnace. “A Child Can Do It!”

SUPERIOR Furnaces and UTICA Heaters respond quickly and effectively to change of dampers. They're built that way.

Ask for our new catalogues—just out.

Exclusive agencies given and protected.

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BORN STEEL PLATE RANGES.

The demand for them keeps on growing. That's why we are building a big addition to our already extensive plant.

A postal from you will bring catalogue and trade prices.

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The New WALKER BOILER for Steam: for Water

Our boilers for either Steam or Water Heating will extract more heat from a shovelful of coal and keep the radiation warmer and at a more even temperature than any other boiler. Why? Because every part of its highly effective heating surface in the fire box, or over the fire, is exposed to direct heat. Boilers are fitted with all best and latest improvements, easy to clean flues and to operate. We want you to become acquainted with our productions. It will pay you. Burn any kind of fuel.

SOLD ON THE HONEST RATING PLAN.

Catalogue on application.

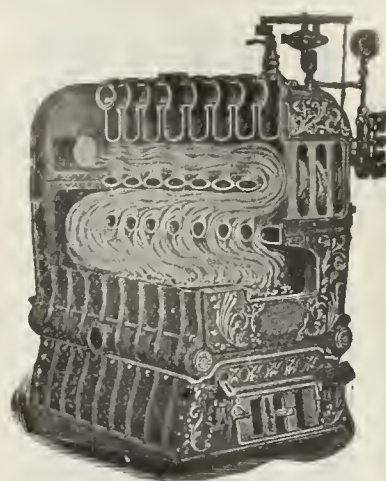
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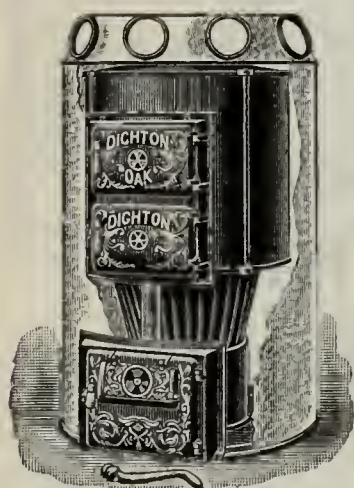
Finest Factory in this Line in the World.

Prompt Deliveries.



Made in 21 Sizes,

For Steam or Water.



THE "Dighton Oak" Furnace

Dimensions and List Prices:

No. of Furnace.	Diameter of Fire Pot.	Height of Castings.	Diameter of Casings.	List Price of Castings.	List Price of Casings.	List Price of Wood Grates.
190	20 inches	51 inches	36 inches	\$ 48 00	\$ 8 00	\$1 68
210	22 "	53 "	39 "	56 00	9 00	2 08
230	24 "	51 "	42 "	68 00	11 50	3 36
250	26 "	53 "	46 "	78 00	14 00	4 17
282	29 "	60 "	52 "	110 00	17 00	6 67
310	31 "	62 "	52 "	135 00	17 00	7 50

The "DIGHTON OAK" is made especially for burning wood, but is as well suited for coal, coke or gas for fuel.

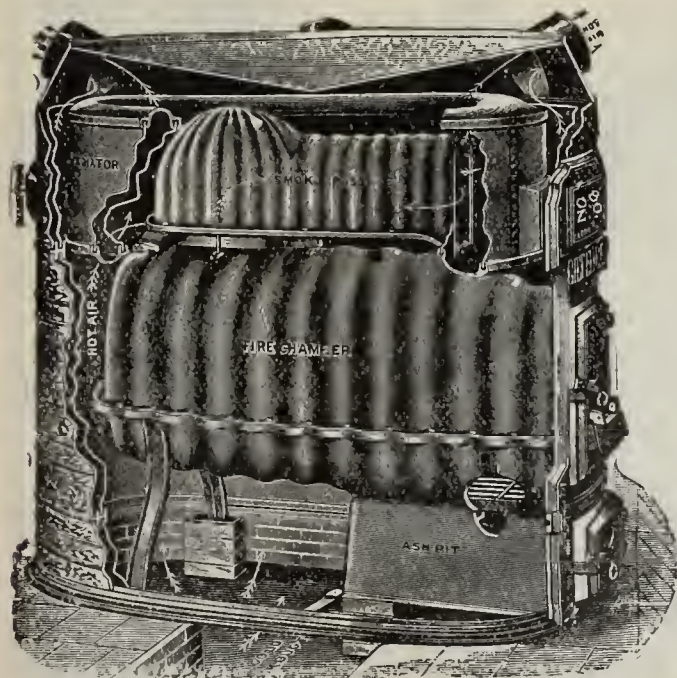
The general type of construction is exactly the same as the regular "DIGHTON" which has become so well-known as a durable and economical heater. The outside measurements, flue construction and flue measurements are the same; the large double feed doors allow of taking in large chunks of wood or a 4-foot stick cut once.

The wood grate is not fastened to the fire pot or coal grates; it rests upon the triangular grate bars, and by easily turning these bars the fire is thoroughly cleaned.

If at any time it may be desirable to use coal instead of wood as fuel, this grate can be removed in a minute's time through the feed door and set aside until such time as you wish to change to burning wood again.

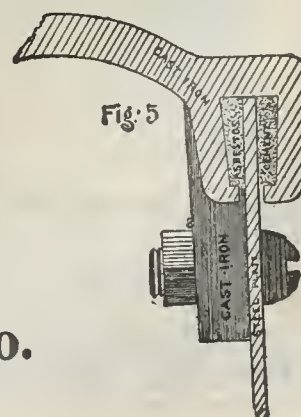
DIGHTON FURNACE CO., Taunton, Mass.

GILT EDGE



stands for best when applied to furnaces. The many dealers who have installed and the thousands of householders whose homes have been heated by our furnaces show they like the Gilt Edge, as will be seen by the testimonials they have written. Let us send you a few of them.

The Keystone Joint used in Gilt Edge Furnaces is the only permanent gas tight steel and cast iron joint on the market.



R. J. Schwab & Sons Co.
MILWAUKEE

Established 1850.

OUR REPUTATION



We've been making high grade heating apparatus for 52 years, until the name "THATCHER" has now a well defined meaning for individual merit. It stands for unrivaled construction and efficiency in operation. It means a better value and a stronger guarantee for the dealer—*things backed by a half century reputation.*

Furnaces. Ranges. Steam and Hot Water Heaters.

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Works: Newark, N. J.

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The Robinson Tubular Warm Air Furnaces

give universal satisfaction wherever used.

They are up-to-date in every respect and have many special features not found in other furnaces.

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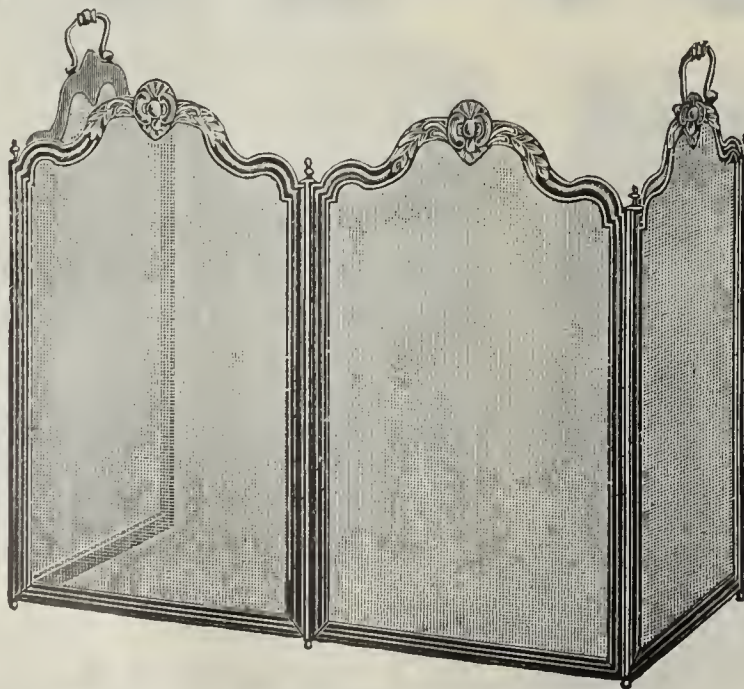
ROBINSON FURNACE CO., Chicago.

FRENCH FOLDING SCREENS FOR FIRE PLACES

We are the only manufacturers of this line in the United States.

Send for Our Prices
Before Importing.

Our screens are heavier, smoother finished, and generally better than the imported article.



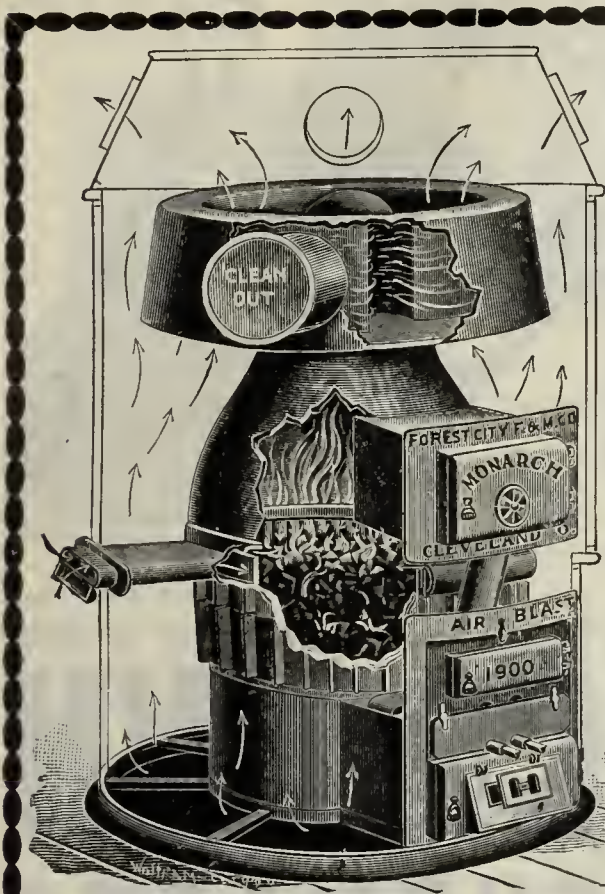
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A large variety of styles.

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Monarch Air Blast Furnaces.

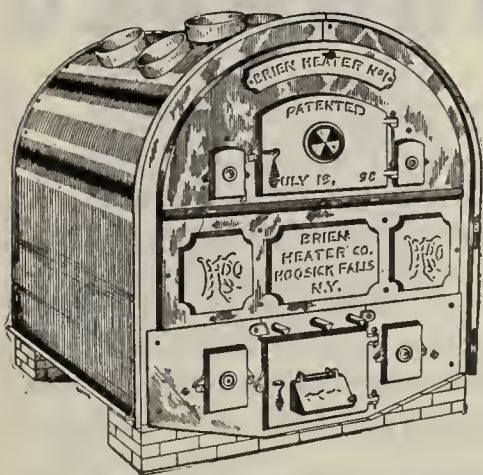
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For Hard and Soft Coal.

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Gray Iron Castings to order. High
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Brien Heater.

A perfect, all cast WOOD or
COAL burner. There is no
other Hot Air Furnace as
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Write for territory, catalog and prices.

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HOOSICK FALLS, N. Y.



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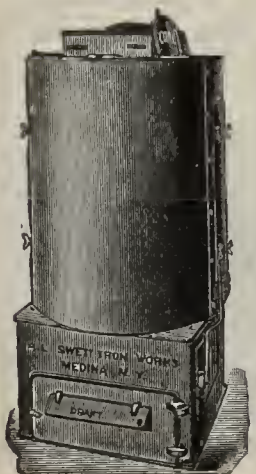
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CORE BAKING,
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OVENS FOR Bakers, Confectioners, Hotels, Etc.

Made in all sizes, single and double, for coal, wood,
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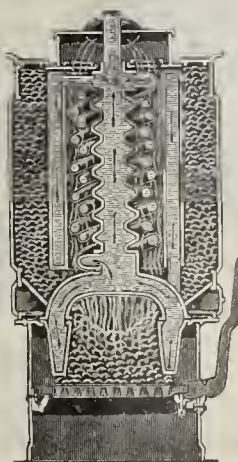
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For heating dwellings and other
buildings; also for greenhouse heating.

SAVES FUEL,
and is a success in every way.

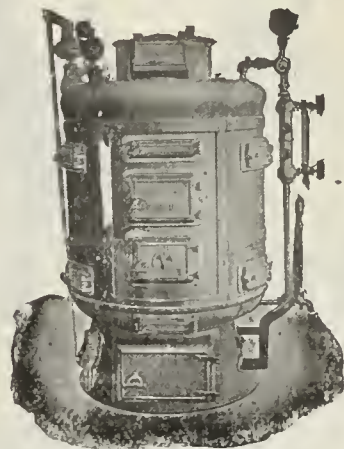
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for Steam and Water Heating.



Pierce Improved Florida Steam Boiler.
LARGE HEATING CAPACITY.
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Endorsed by the foremost Architects
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The Champion Hot Water Combination Heaters.

They Fit Any
Furnace.

Base section when
used without ring
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Ring Section



These Heaters are made in five sizes diameter, and
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Will heat those cold rooms or an addition to the build-
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cheaper than coils and will do more work.
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FRANK D. STOLZ,

115 Lake St.,

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There are Blowers, and There are Blowers.

"ABC" Volume
Blowers need little
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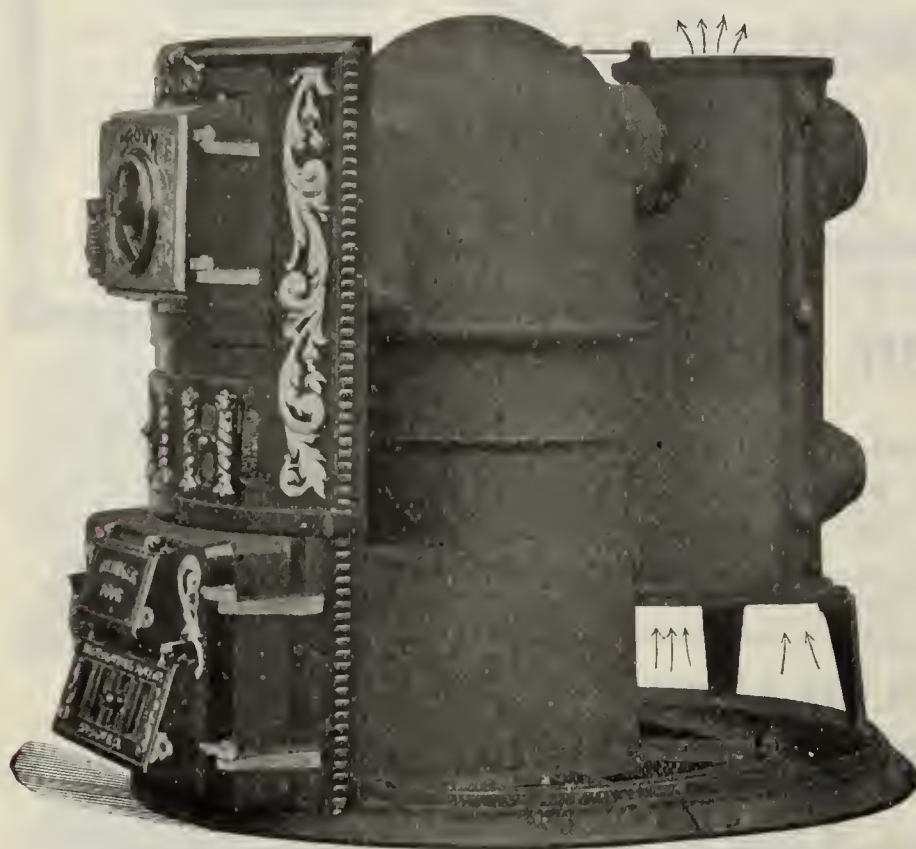
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All cast front.

For hard or soft coal.

Low-down type in four sizes.

Slightly oval in form.

Adapted for heating the finer
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Castings extra heavy.

Deep sand joint and deep ash pit.

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The Helios-Upton Co.'s

First on the Market. 150,000 Sold.

**430 FLAT BACK.**

3 inches in diameter.

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Oven Indicator

has a dial graduated in the simplest possible manner, as can be seen. This graduation was adopted because every oven has its own peculiarities, and an indicator adjusted to one oven might be incorrect for another. The *Standard* can be adjusted to any oven and has no complicated parts. Made in 3 styles.

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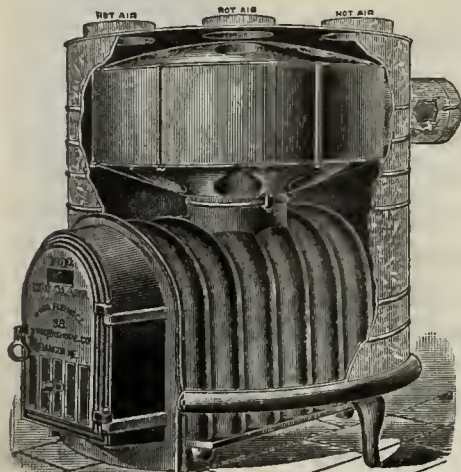
HELIOS-UPTON COMPANY,

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All Kinds of Special Instruments and Appliances Manufactured by Contract.

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THE HOT BLAST.

Made With SINGLE PIECE Fire Box Body—
a practically indestructible casting, heavily
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HAVING IMMENSE AREA OF RADIATING SURFACE—
all directly exposed to the heat of the fire, giv-
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MADE IN A WOOD SECTION,
where wood is burned practically—not theo-
retically.

Our IMPROVED MONITOR,
2 sizes, PORTABLE OR BRICK SET

Our Low Priced HOT BLAST,
3 sizes, PORTABLE OR BRICK SET.
Thousands in use in all sections of the country.

Send now for illustrated booklet giving full particulars and
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PORTABLE
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*Unequalled in the Great
Essentials---Simplicity,
Durability, Economy,
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NO BETTER MADE.

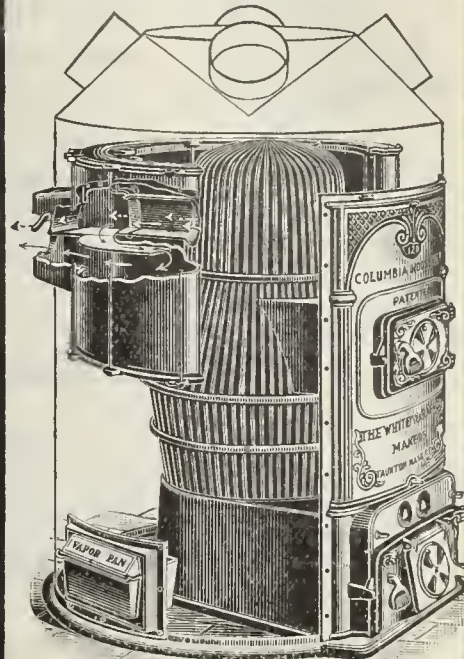
Write for catalogue. Special price to the trade.

MANUFACTURED BY

The MONCRIEF FURNACE &
FOUNDRY COMPANY, ATLANTA, GA.

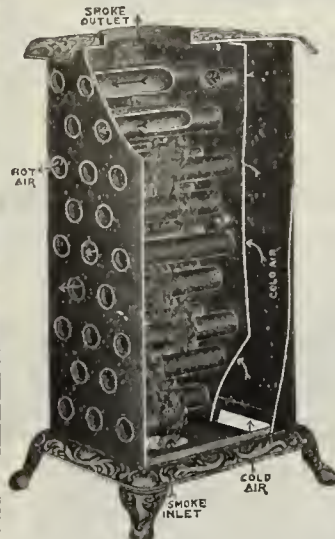
COLUMBIA HOUSEHOLD.

A high grade cast pot furnace sold at a
medium price.



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THE WHITE-WARNER CO., Taunton,
Mass.

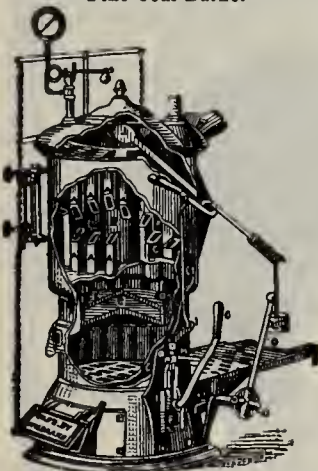
INDEPENDENT STOVE PIPE RADIATORS.



Don't buy Radiators with-
out learning about the
Independent for
1902.

Independent Register Co.,
CLEVELAND, O.

Sectional View of the
TORRID
Fine Coal Burner



For Steam or Hot Water Heating

This boiler is made on an en-
tirely new principle and is

The Only Boiler

that will burn Pea or Buck-
wheat Coal successfully.

SAVES TIME. SAVES MONEY.
RESULTS UNEQUALED.

MADE BY

W. H. DRAKE 36 Clinton St.
NEWARK, N.J.

MANUFACTURER OF

The TORRID Steam and Hot Water Boilers
for burning either anthracite or bituminous coal.

Factory, Hackettstown, N. J.

Send for catalogue.

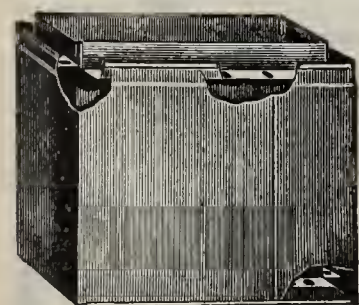
Chicago Furnace Supply Co.

62-64-66 W. Monroe Street,
113-15-17-19-21-23 So. Clinton Street,
CHICAGO, ILL.

MANUFACTURERS OF

Furnace Pipe, Elbows, Fittings
and Supplies.

We are a New Firm with New Goods and
New Prices.



Write for illustrated catalogue.

Common Sense Circulator and Radiator.

(Patent applied for.)

This Heater is so simple that its
superiority over all others is
plain. Being open at each
end the cold air is taken in
at the bottom, passing out at
the top heated; producing a
circulation unequalled by any
radiator. Is easily cleaned
or repaired. Takes the place
of a joint of pipe. Diameter
of casings, 10½ and 12½
inches. Send for prices.

A. C. SELLECK,
755-757 W. Madison St., CHICAGO, ILL.

— A SOUTH STREET butcher displays a
sign which reads: "Don't be cheated by
others. Buy your meats from us."—*Ex-
change.*





I can hold my hand over my chimney. No waste heat. I use a Rochester Radiator and save half the fuel.

THIS shows the construction of the ROCHESTER (stove-pipe) RADIATOR.

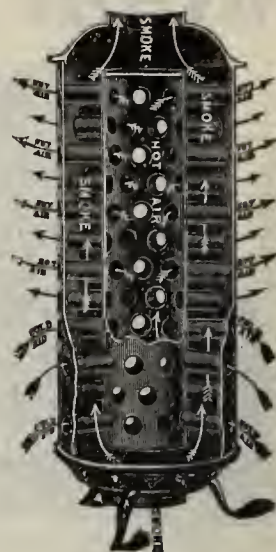
THIS has been advertised extensively for years.

THIS is the one your customers have frequently asked you about.

THIS is built like a steam boiler.

THIS has 9/10 of its radiating surface directly over the hot current, where every square inch of surface is as effective as six at the side.

THIS gives the results that have so surprised those who have used them and induced our patrons to do so much missionary work for us. Your patrons will gladly do it for you, if you give them the opportunity. Get a few started and after that they will almost sell themselves



4,866 sq. ins.

Rochester Radiator Co.,

100 Furnace St., Rochester, N. Y.

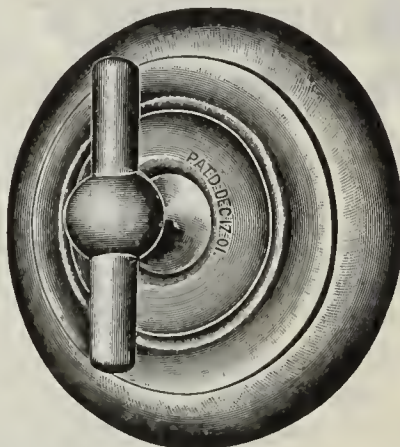
**SOMETHING
NEW**

Sheet Steel Draft Registers with Screws Complete.

PATENTED DEC. 17, 1901.

Threads are cut and disk is securely fastened
Without cotter pins or washers,
Yet it is loose or tight as wanted.

SEND FOR PRICES.



STOCK SIZES.

2½ in.	4 in.
3 in.	4½ in.
3¼ in.	4¾ in.
3½ in.	5¼ in.
3¾ in.	

Any size made to order in quantities.

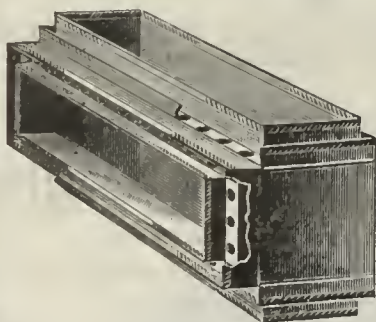
Manufactured by

The H. A. MATTHEWS MFG. CO., Seymour, Conn., U. S. A.

FURNACES

**EXCELSIOR HEATING
SPECIALTIES**

PIPE



Excelsior

FURNACE PIPE,
HOT AIR REGISTERS,
STOVE PIPE ELBOWS,

ARE ALL SELLING AT

MUCH BELOW

their real value.

This is also true of many other things which we make, as our Quotation Sheet will demonstrate.



EXCELSIOR IDEAL
ELBOW

ELBOWS

EXCELSIOR STEEL FURNACE CO.
38-40 W. MONROE ST.-CHICAGO.

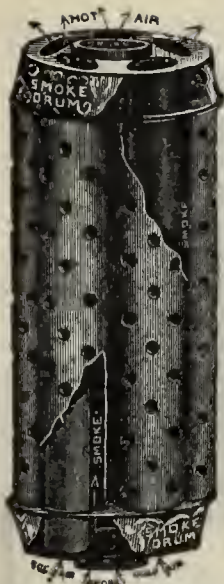
REGISTERS

REFRIGERATORS,
BLUE FLAME OIL STOVES,
GASOLINE STOVES.

LARGEST JOBBERS
in
NEW ENGLAND.

GAS RANGES,
FURNACES, STOVES,
RANGES AND REPAIRS.

HENRY N. CLARK CO., 56 and 58 UNION ST., **Boston, Mass.**



Semi-Sectional View.

Every Practical Stove Dealer

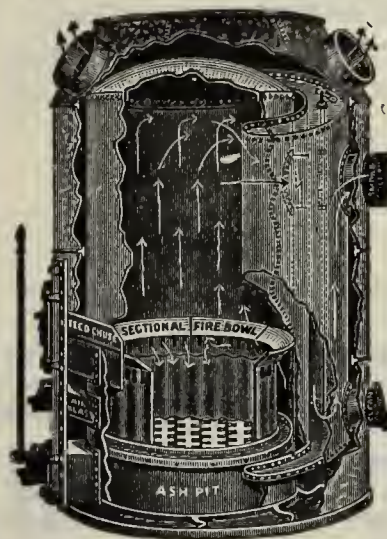
knows that heat without circulation is valueless. The best circulator gives the best heat.

New Era Radiators have **perpendicular** tubes. They take the cool air in at the bottom and rapidly heat it in the natural way **as it ascends**. Their construction tends to **increase** circulation instead of **retard** it, as tubes in any other direction would. All the products of combustion are compelled to touch the outer or inner surface of the tubes and the maximum amount of heat is radiated and circulated throughout the room.

If you would sell the best Radiator, you must buy the best. "**New Eras**" are best in material, best in workmanship, best in appearance, and best in results. Made in three styles and many sizes. Prices are right, affording a large margin. Don't buy something cheap on which you make but little. People are willing to pay a fair price for a good article. Send for our inducements now and be prepared to talk **New Era Radiators** at the right time.

WILMOT CASTLE & CO., - 76 Elm Street, Rochester, N. Y.

The Torrid Zone Furnace



is a trade winner because it has points of merit peculiar to itself that can be found in no other steel furnace. Our new catalogue is now ready to mail and a description of our Hot Air and Hot Water Combination Furnace can be seen in it. We furnish either the cast iron lining or the fire brick at the same price. Our Wood Furnace is called a powerful heater by those who use it.

CATALOGUE FREE.

Lennox Manufacturing Company,

Eighth Ave. and Frederick St.,
MARSHALLTOWN, IOWA.

H. & C.

Wrought
Steel

REGISTERS

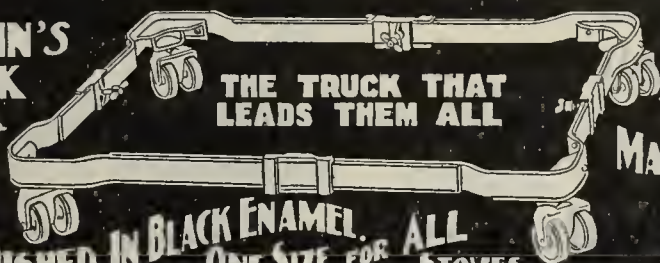
...and...

VENTILATORS.

STRONG, LIGHT,
HANDSOME in SIM-
PLICITY of DESIGN.

THE DAISY ADJUSTABLE STOVE TRUCK

MARTIN'S
TRUCK
CAST-
ERS



THE TRUCK THAT
LEADS THEM ALL

STEEL FRAME
MALLEABLE IRON
FITTINGS.

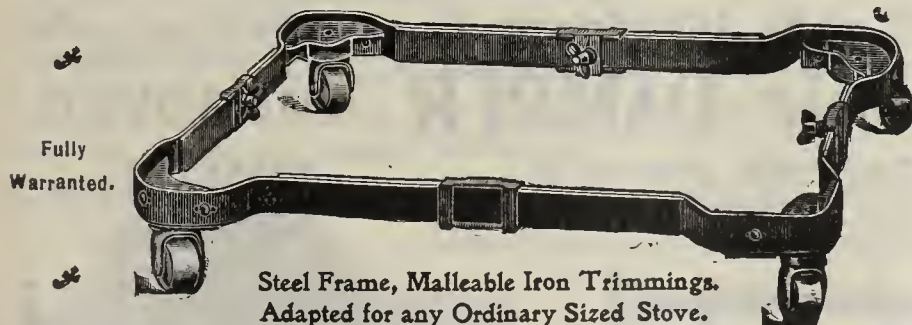
FINISHED IN BLACK ENAMEL.
ONE SIZE FOR ALL

STOVES.

TUCKER & DORSEY MFG. CO. INDIANAPOLIS IND.

The Standard Adjustable Stove Truck.

FINISHED IN BLACK ENAMEL.



Fully
Warranted.

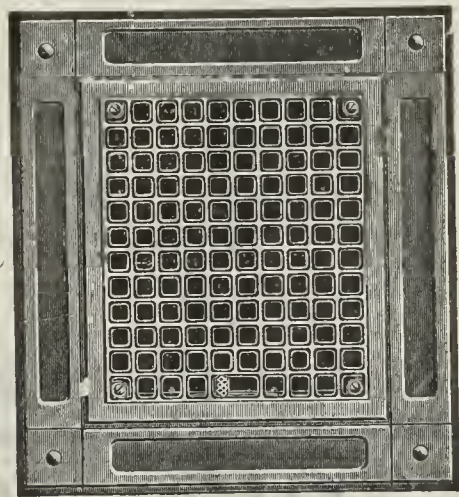
Well Made,
Strong and
Durable.

Steel Frame, Malleable Iron Trimmings.
Adapted for any Ordinary Sized Stove.

Manufactured by **ARCADE MANFG. CO., - Freeport, Ill.**

Vacuum Steam Heating System

MORGAN & CO., CHICAGO



FURNISHED WITH
WROUGHT STEEL
or WROUGHT BRASS
FACE PLATES, AND
IN ALL FINISHES.

Manufactured by

The HART & COOLEY CO.,
New Britain, Conn.

GENERAL SALES AGENTS,
STANLEY WORKS,
New Britain, Conn.

79 Chambers St., New York.
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WINCHESTER

A heating engineer who had been called in consultation by a steamfitter, who had a poor working job, said, "The heater seems to be standing around doing nothing." We are glad to say that his remarks were not made of a "WINCHESTER" heater, which always does its work. Smith & Thayer Company, Boston, Mass.; 105 Beekman Street, New York.

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We Don't Make Furnaces

but we supply 75% of the furnace manufacturers with **COLEBROOK'S** Asbestos Furnace Cement. How is it with you? Are you using **COLEBROOK'S** Asbestos Furnace Cement and **INDESTRUCTIBLE** Stove Putty? Gets as hard as iron and no heat can destroy it. Why not have the best? Poor cement is not cheap at any price and **COLEBROOK'S** is as cheap as the cheapest. Put up in all size removable cover cans, tubs, barrels and half-barrels. Samples and prices for the asking. Manufactured only by

W. H. COLEBROOK, SONS & CO.

SYRACUSE, N. Y., U. S. A.

P. S.—Largest makers of Asbestos Furnace Cement in the world. A strong statement but conscientiously made.

Buy the

BLACK KID STOVE POLISH



*and don't pay for it if not
the best you ever used.*

It's absolutely the best made.

Price, 65 Cents per Can.

Nickel Plate Stove Polish Co., Manufacturers, Chicago.

STOVE REPAIRS

If you order from us and save 200 Premium Shipping Tags
We will give you, free, a one thousand-mile mileage book on any railroad.

We Carry in Stock Repairs for 20,000 Different Kinds of Stoves, Heaters and Ranges

CHAS. C. HEATH & CO., 136-138 N. 2d St., Philadelphia, Pa., and Baltimore, Md.

The YANKEE Hot Air DAMPER (IMPROVED.)

HOT AIR.



THE YANKEE EXCELS.

Above All—Cheapness—a dealer cannot possibly make dampers as cheaply as we sell the Yankee. Easily put in and taken out of pipes. Stiffest, quickest-working and neatest damper on the market.



It is impossible for this rod when in position to move either way.

ROD POINTS: Has wood enameled handle. Wood handle cannot come off. Washer and spring cannot fall off the rod. Same size of holes are punched on each side of pipe. Rod is made of 1/4 in. cold-rolled steel and slips into damper very smoothly. Sample sent to any Dealer without charge.

SMOKE PIPE.

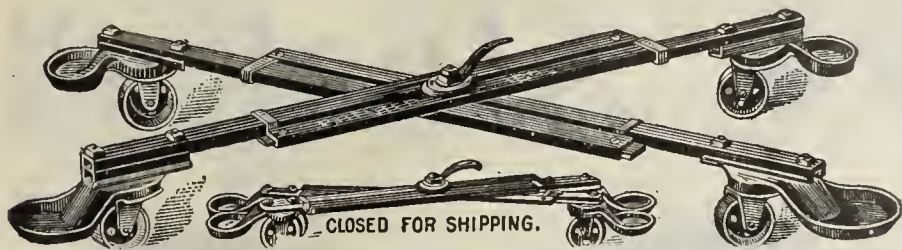


The S. M. HOWES CO., Manufacturers, 40-46 Union St., Boston, Mass.

Sales Agency for the
ALUMINUM and ELECTRIC
OIL HEATERS.

Best on Earth.

The Model Stove Truck is out of sight when under a stove.



Is all steel, has only one adjustment, is practically indestructible.

We offer to take back and refund money if, after a month's trial, the Model is not satisfactory.

SEND FOR CIRCULAR AND PRICE.

The S. M. HOWES COMPANY,
BOSTON - - - MASS.

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ASSORTED PACKAGES.

Put up expressly
for the Retail Trade.

ONE POUND—4 SIZES.

$\frac{1}{4}$ lb. each size.

North Carolina,	\$2.00	$4\frac{1}{2} \times 6$	$2\frac{1}{2} \times 3$
Wyoming,	1.70	$2\frac{3}{4} \times 3\frac{1}{4}$	2×5

TWO POUND—8 SIZES.

$\frac{1}{4}$ lb. each size.

North Carolina,	\$3.80	2×3	$2\frac{3}{4} \times 3\frac{1}{2}$
Wyoming,	3.25	2×4	$2\frac{1}{2} \times 3$
		3×3	$2\frac{1}{2} \times 5$
		$3 \times 4\frac{1}{2}$	$4\frac{1}{2} \times 6\frac{1}{2}$

THREE POUND—12 SIZES.

$\frac{1}{4}$ lb. each size.

North Carolina,	\$5.25	$4\frac{1}{2} \times 5$	$2\frac{3}{4} \times 4$
Wyoming,	4.25	$2\frac{3}{4} \times 4\frac{1}{2}$	2×4
		3×3	$2\frac{3}{4} \times 2\frac{3}{4}$
		$2\frac{1}{2} \times 3$	$5 \times 6\frac{1}{2}$
		2×3	$2\frac{1}{2} \times 5$
		$2 \times 4\frac{1}{2}$	$2\frac{1}{4} \times 3\frac{1}{4}$

Above Prices Net. No discount.

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NEW YORK. CHICAGO.

Fire Brick Linings

—FOR—

Stoves, Ranges, Furnaces.

Eagle Stove Clay.

Incandescent Gas Fuel.

CUPOLA LININGS

For Iron and Brass Foundries.

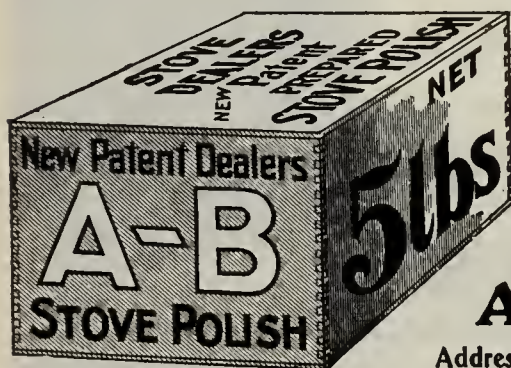
WILLIAMS STOVE LINING CO.,
TAUNTON, MASS.

MICA

Specially Prepared for the
Stove Trade.

OHIO MICA CO., CANTON, OHIO.

SAMPLES SENT FREE!



To Stove Dealers and
Manufacturers

This new patented prepared powdered stove polish mixes quick, shines easy, black, brilliant and is waterproof. No rust or dust. Cheapest and best polish ever invented. Keeps any length of time in any climate. You make your own paste at once. Investigate for fall trade. It will pay you. Write us for prices. Paste or Dry Stove Polish, 5-lb. can. boxes or bulk.

Ayling Brothers

Address Dept. B., 8-14 Haddon Ave., Chicago, Ill.

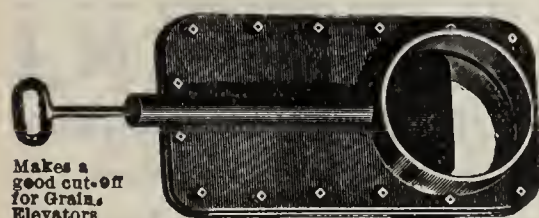
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will make money and save money by using

Dixon's Graphite Cement.

There is nothing equal to it for repairing fire brick in stoves, furnaces, etc. Let us send you sample and prices.

JOSEPH DIXON CRUCIBLE CO., - JERSEY CITY, N. J.



Makes a
good cut-off
for Grain
Elevators

IMPROVED WIND-GATE

SEND FOR PRICE-LIST AND DISCOUNT TO

MINER & PECK MFG. CO.
NEW HAVEN CONN.



DO you want
Stoves and
Heaters that are
easily sold and

STAY SOLD? We have
been very successful in de-
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THE GOBEILLE PATTERN CO.,
CLEVELAND, OHIO.

THE GEM
Stove Pipe
Thimble.

Kramer Bros.

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Sheet, cut or uncut, Powdered and Flake

WRITE TO

ASHEVILLE MICA CO.,
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Troy Nickel Works,

ALBANY, NEW YORK.

All The Latest Novelties in Stove Trimmings.

ALWAYS COLD.

Your Stock is Incomplete



If it doesn't include the Rutland Improved Stove Lining. We know it to be true because we have on file strong testimonials from satisfied buyers who have tried other kinds. They are now constant buyers because they appreciate the excellent quality of our goods and our honest business transactions with them.

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"O.H." ONE PIECE STOVE PIPE Elbows

Perfectly round and true to size. With long ends, DOUBLE LOCK SEAM in throat or under side of Elbow.

Handsomest, Heaviest and Strongest Stove Pipe Elbow Manufactured.

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THE LAWRENCE-LETTS ELBOW CO., Ltd., - - Waverly, N. Y.

THE GEORGE W. COPE Stove Pattern Works.

ORIGINAL, ARTISTIC AND
PRACTICAL CONSTRUCTION.

Cor. Randolph and Atwater Sts.,
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SHINES FOR ALL

It is the polishers' friend, and
will polish anything.
Write for free sample
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ington St.,
Ind'p'l's, Ind

GEO. W. HOFFMAN.

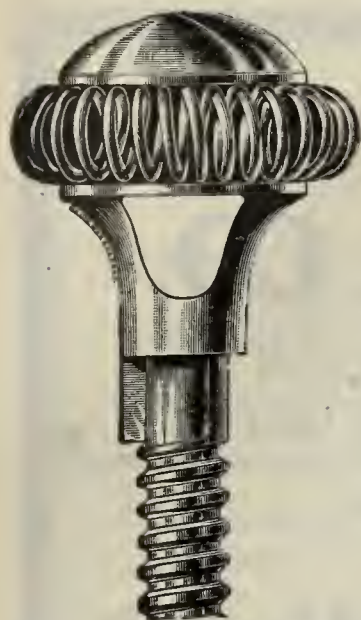


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FOR STOVES AND HEATERS.

First-class in wood and iron.

Vedder Pattern Works. - Troy, N. Y.



No. 346 Draft Register.

No. 520 ZERO Screw Knob.

MANUFACTURED BY

W. H. SHIELDS & CO.,

Successors to W. F. GREENE.

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RANGE, STOVE AND HEATER REPAIRS

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36 to 46 South Fourth Street, Brooklyn, L. I.

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PRESBREY STOVE LINING CO.,

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WATER FRONTS.

Try us, we have the Stock.

Our price is right.

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CHAMPION STOVE CLAY

Is the only brand made of crucible materials, viz.: Imported German Fire Clay and Plumbago from Ceylon.



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Your jobber can furnish the goods.

BRIDGEPORT CRUCIBLE CO.

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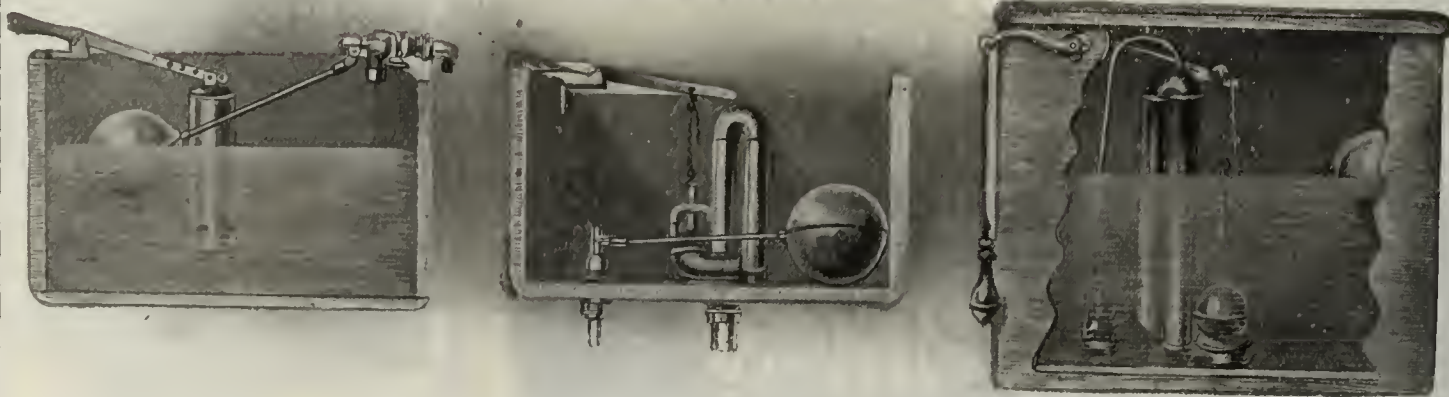
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Plumbers' Supplies In Great Variety

Solicit inquiries from the trade in territory east of Chicago, having, in direct shipment from the works, especial facilities not only in roughing goods but in high-class finishing material. ✂

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More Large Plants Now Operating than all other Systems Combined

TOWN AND VILLAGE LIGHTING
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POSITIVE

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10 LIGHTS TO 10,000 LIGHTS OR OVER

Self-Cleaning Generators

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We Protect Our Agents and Guarantee Our Goods.



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"Pathfinder"
Portable

Acetylene Apparatus

Hendler Pat. and Pat. Pending.

WRITE FOR TERMS.

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ALWAYS IN STOCK.

ALL SIZES OF

Galvanized range boilers,
expansion tanks and boil-
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inside for heating water
by steam.

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BOSTON
BRASS
PIPE
HANGER

THE ONLY ONE

which requires but one
form of holder.

Send for Circular.



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YOUNG,**
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**LEATHER and RUBBER
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Machine cut, at less price than can be cut by
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AUTOMATIC STEAM AIR VALVE
OF ITS KIND ON THE MARKET.**

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direct to the dealers. Write at once for circulars and discounts.

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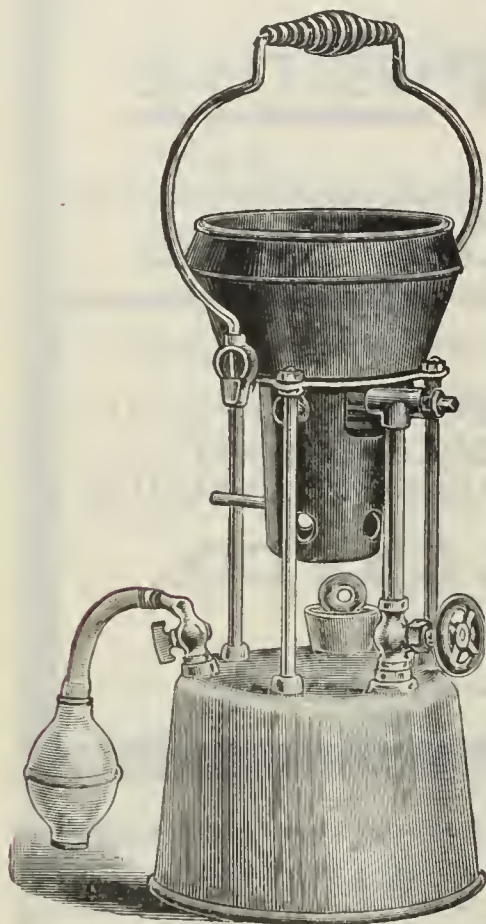
CHICAGO



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HYDRAULIC RAM**
is not to be compared with the
Ram of the past. Its superior
qualities can at once be seen, it be-
ing able to deliver water to a
greater altitude under similar con-
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will have a leader in the Kline.
Responsible parties wanted every-
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L. WOLFF MANUFACTURING COMPANY,

General Office,
93 W. Lake Street, CHICAGO.
WOLFF'S IMPROVED PLUMBERS' FURNACE.
The "DURO."



THE "DURO" "F" 1241.
PRICES UPON APPLICATION.

Quantity shipments are packed in cases 6 and 12 furnaces each.

The "DURO" Plumbers' Furnace

Has Drawn Steel Reservoir
Heavily Galvanized.

Drawn Steel Coll Cup.
Wrought Steel Bottom.
Patent Wire Handle.
Improved Filling Plug.
Safety Air Cock Joints.
No Cast-Iron Parts.

It weighs less than any other Furnace now in use.
In placing on the market

Our Improved Plumbers' Furnace we have fully succeeded in producing *the best furnace made*. Most perfect in every detail. Of the highest efficiency. In operation, positive and reliable. Of substantial construction; combining lightness, strength and durability, at no more cost to the trade than the old style.

All component parts are interchangeable, being accurately made and fitted before shipment.

Illustrated Catalogue and Price-List sent upon application.

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63 Centre Street, New York.

Manufacturers of

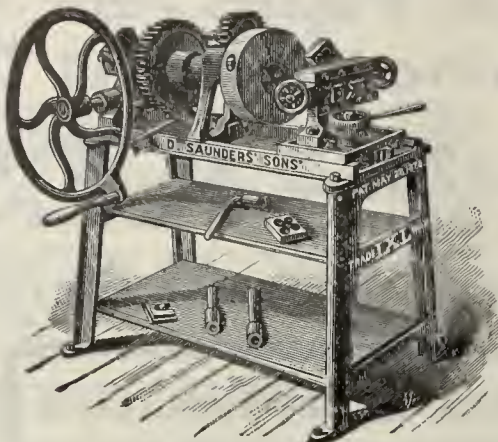
LEAD PIPE, SHEET LEAD, SHOT,

And Sellers of

Everything You Want for Plumbing.

D. SAUNDERS' SONS,

MANUFACTURERS OF THE ORIGINAL



Send for Circulars.

TRADE MARK
I. X. L.

Pipe Cutting and Threading
Machine.

Beware of Imitations. None genuine without our Trade-Mark and Name.

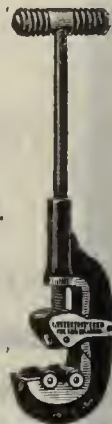
STEAM AND GAS FITTERS'
HAND TOOLS.

Also Patent Wheel Pipe
Cutters.

AS SHOWN BY THE CUT.

Pipe Cutting and Threading Machines
for Pipe Mill Use a Specialty.

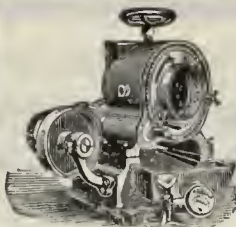
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FORBES PATENT DIE STOCK

FOR HAND OR POWER.

Occupy less floor space, require less power to run, more simple of construction, far cheaper than any other machine of same range.



Send for Illustrated Catalogue.

Manufactured by

THE CURTIS & CURTIS CO., 56 Garden Street,
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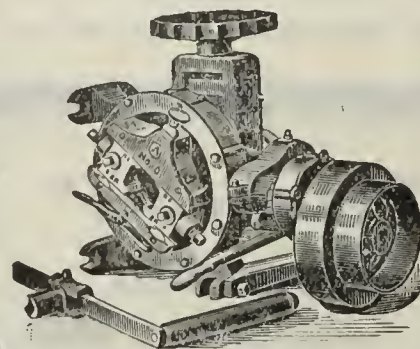
NO DUST OR CHIPS

Can interfere with the work of

ARMSTRONG'S GENUINE
PIPE THREADING MACHINES
(HAND OR POWER).

Moving parts run in oil in covered chambers.
For other strong points see catalogue.

ADJUSTABLE STOCKS AND DIES.



No. 0 Threading Machine, Power Attachment.

THE ARMSTRONG MFG. CO.

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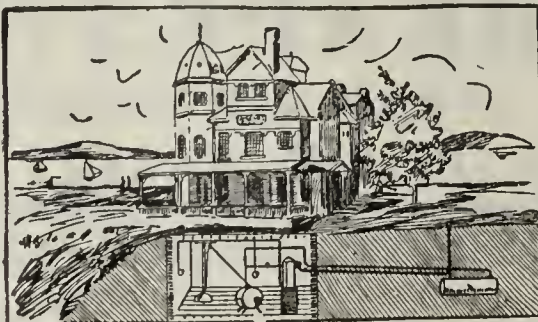


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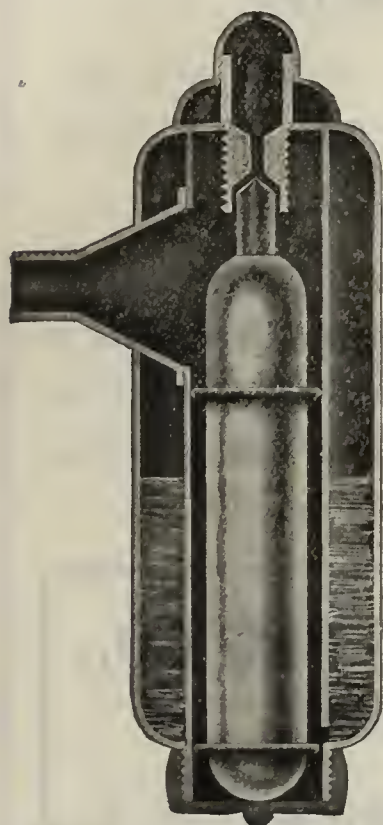
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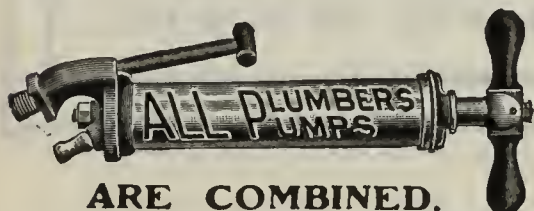
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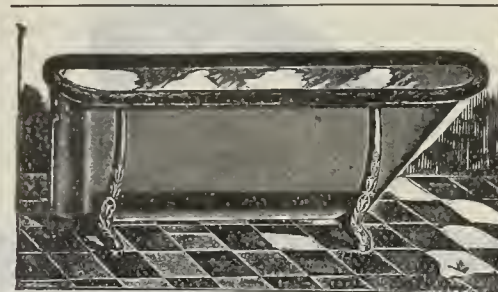
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THE METAL WORKER.

NEW YORK AND CHICAGO.

New York, August 16, 1902.

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Volume LVIII.....No. 7
Index to Reading Matter.....Page 64

Pig Iron Production Reduced.

The effects of irregularity in the fuel supply, caused by the anthracite coal strike, are exhibited in a reduction in the pig iron production of July as compared with that of June. The monthly blast furnace statistics of *The Iron Age* show that we entered August with a weekly capacity of 336,465 tons, as compared with 350,890 tons on July 1, caused chiefly by the blowing out of a few large furnaces in the Central West. In spite of the fact that July was a month of thirty-one days, the production of pig iron was only 1,476,000 tons, and from the present outlook it seems likely that August will show a further reduction. Meanwhile the demand for pig iron keeps up in large volume and a majority of the furnaces are practically out of the market, having sold their output for many months to come. It is reported that three-fourths of the output of the furnaces of the South up to the middle of next year is already booked, while the principal Northern furnaces can take very little more tonnage for the first half of 1903. These facts illustrate the stringent conditions already prevailing in the iron market, and these conditions will be necessarily emphasized by a further decline in the production.

Acetylene and Insurance.

One of the most important subjects ventilated at the annual meeting of the International Acetylene Association in Chicago this week was the obstructive attitude of the insurance companies toward this industry. Those who are engaged in the industry may feel encouraged, however, in view of the experience of the manufacturers and users of gasoline stoves. Through the sheer force of its merit the public have decided to use gasoline for fuel regardless of the interests of the insurance companies, and the narrow, selfish restrictions that were originally placed upon the use of gasoline goods have had to give way to the common sense which was the basis of its adoption by the people. It is fortunate that acetylene as an illuminant has also intrinsic merit that is readily discernible and quite generally appreciated. While it may be exasperating to those who have expended much effort in the introduction of this new method of lighting to have their energies still further taxed by the obstructive methods and restrictions of the insurance companies, the course to be taken, as reflected in the resolution to organize, or patronize special companies who will look more favorably upon acetylene apparatus, follows in the footsteps of the gasoline stove trade, and promises to be equally successful in forcing

a recognition of this useful apparatus by these ultra-conservative insurance concerns. The action taken is in the right direction and is worthy of the support of every one identified with the acetylene trade, whether members of the association or not.

Undesirable Immigration.

Food for thought is presented by the immigration figures for the fiscal year 1902. In the first place, the movement of foreigners into this country during the twelve months broke all records. The total was 648,743, or 33 per cent. more than in 1901, 45 per cent. more than in 1900, 208 per cent. more than in 1899 and 283 per cent. more than in 1898. In quantity, the record is unsurpassed. Unfortunately the same cannot be said in regard to the quality of immigration. On the contrary, deterioration of quality has marked the immigration of the past twelve months. Of those over fourteen years old, who were entered, 28.7 per cent. were illiterate. This is the highest rate of illiteracy in the records of the Immigration Bureau. Another feature that is far from gratifying is the fact that more than one-half the immigrants—54.6 per cent.—came from Southern and Eastern Europe, the countries that send us the least desirable type of embryo citizen. This is by far the largest percentage of immigration that has come in any year from the regions referred to. The number of Southern Italians, the least enlightened and profitable portion of that country, increased from 65,600 in 1899 to 152,900 in 1892. The number of Poles rose from 28,400 to 69,600 and the number of Slavs and Croats from 24,400 to 67,100 in the same period. It is worth noticing that representatives of the three last named nationalities are conspicuous among the disorderly element in the coal regions at the present time. Moreover, it is these Eastern European immigrants who swell the total of illiteracy. For example, 42.2 per cent. of the Slavs and Croats over fourteen years old are shown to have been illiterate and 54.1 per cent. of the Poles. The exhibit is not very reassuring. Two-thirds of a million foreigners coming into the country in one year and nearly one-third of them illiterates and practically paupers. Furthermore, over 69 per cent. of them settled in New York, Massachusetts, Pennsylvania and Illinois. It has become a really serious question as to whether the country can properly digest and assimilate such a mass. Surely measures should be taken to check this influx of undesirable immigration. In the interests of American labor, apart entirely from the question of labor unions, it seems that a wholesale invasion by the class indicated above, such as is now going on, should have some sort of limit. Why should America be made the dumping ground of the residue and offscouring of the nations?

Are You Ready?

No very keen perception is needed to see that the workmen who are sent to do the most important work and receive the highest wages, the salesmen who have the best territory and draw the largest salaries, the business men who have the best trade and own their own stock and fixtures, are those who are ready to seize the opportunity when it offers and to meet the demands that

emergencies may make upon them. A very pertinent question, therefore, is, "Are You Ready?" The getting ready is a process that never stops. The workman who feels that he is entitled to good wages when he has mastered one branch of trade is not likely to make very rapid strides up the hill of success. The territory which contains the largest and shrewdest buyers is not given to those salesmen who are not possessed of as much practical information as those who buy from them. The business man does not attract a large clientage of customers to his store unless his information covers a far wider field than his everyday stock represents. The man who is sure to overtake success is the one who, after mastering one problem, is immediately on the lookout for some other problem, either of a kindred type or having no direct bearing on his everyday work. The young man, in particular, whose greatest capital is his time, experience or knowledge, increases in value to himself and to others when, in addition to his varied fund of information, he has also learned how to sell his services in whatever field is paying the best price.

It is not enough for a workman to confine his knowledge of mechanics to his own trade alone. His opportunity may be an emergency, when a man who is familiar with the details of some other branch of trade will be invaluable. Those who find pleasure in acquiring knowledge, not only in their own sphere but in whatever other field of usefulness may be brought to their attention, acquire an alertness of mind that fits them to manage operations in which a broad view of affairs and wide information are necessary. The salesman who has made a mental memorandum of all the business men of large buying capacity in whatever line in his territory, and is acquainted with the methods of selling their goods used by men in different lines of trade, is much more likely to be selected to manage the sales department of a large concern than one who has not been so careful in getting ready. The business man who has taken the opportunity of acquiring knowledge of the goods that are necessary to supply the people of his community, even though they may be entirely outside of this line, will be most useful to his customers. His business will naturally broaden with his information and the profits will increase accordingly. Even as "eternal vigilance is the price of liberty," so the continual getting ready is the keystone of success in any branch of business life.

The growth in the importation of manufacturers' materials and the increasing share which such materials form in the total imports are the most striking feature in the record of foreign commerce of the United States in the fiscal year lately ended. Manufacturers' materials, in the fiscal year 1902, supplied nearly half of the total importations and showed a remarkable increase over the preceding year, whereas other classes of imports showed but a very slight increase. Comparing conditions in 1902 with those of 1892, an increase is shown of about 50 per cent. in the imports of manufacturers' materials, and a decrease of about 10 per cent. in other imports. In 1892 the importations of manufacturers' materials were valued at \$278,311,900, against \$418,776,680 in 1902, while the imports of articles other than manufacturers' materials were, in 1892, \$535,281,380, and in 1902, \$484,550,319. These figures are especially interesting in view of the fact that the total imports of 1902 were larger than in any previous year in the history of our foreign commerce. They offer a striking illustration of the activity of our manufacturing industries last year as compared with former seasons.

Evidences of appreciation of the efforts made to give the readers of *The Metal Worker* timely and valuable information are usually gratifying. It is pleasant to re-

ceive acknowledgments of the benefit derived from a perusal of our columns. Greater zeal in endeavoring to make the paper still more interesting is thus enkindled. But sometimes the evidence of appreciation is not altogether satisfactory. For instance, we find in the *House Furnishing Review* for August an editorial reproduced from *The Metal Worker* for July 5 without a line of credit. That the article was highly appreciated is shown by the fact that it appears as the leading editorial in the journal named. We are pleased to have our contemporaries draw freely from our columns, but we protest against the reproduction of our articles without credit. We trust that in this case the failure to mention the source of the article was not intentional, but simply an oversight.

World's Fair Power Plant at St. Louis.

Work has begun on the foundations for a tower to carry the electric wires in the Palace of Machinery, where the great power plant is to be situated. The big switchboard will be placed high on the western end of the Machinery Palace, accessible only from the special gallery. The tower, whose foundations are well below the surface of the ground, will connect the switchboard gallery with the electrical subway, which is 7 x 7 feet and 1 mile long. From this subway the service conduits lead out in all directions to all buildings and all parts of the grounds where electricity is to be used either for power or lighting. Over 100 miles of wooden conduits have been bought for this purpose. The foundation for the tower will be concrete, and the walls will be lined with fire proof tile.

The power plant in the western end of the Machinery Palace will develop by means of four immense Westinghouse steam driven generators 8000 kw., the equivalent of 10,720 horse-power. The Exposition has also arranged to buy 7500 kw., or 10,050 horse-power, from the Citizens' Light & Power Company, making a total of 20,770 horse-power. Two thousand horse-power will be developed from exhibit plants in the Machinery Palace, which will be used by the Exposition for a variety of purposes. All power used by the Exposition will be controlled from the one great switchboard. Such an unusual volume of power is necessary because of the great number of moving exhibits in many of the buildings and the extensive electric lighting and cascade schemes. The intra-mural railroad, several miles in length, will also require a large volume. The boiler house will be situated 150 feet west of the Machinery Palace, and will contain a battery of boilers of unusual size and steam capacity.

Electricity for Cultivation of Plants.

United States Consul-General Richard Guenther of Frankfort, Germany, quotes a Frankfort journal describing experiments made by J. Fuchs, a wine producer of Elba, in the use of electricity in grape culture. He planted, some years ago, four fields with native grapevines, in the midst of a district infested with phylloxera, and treated two of these fields with "air electricity." The difference in the development of the grapes of the fields was apparent; those treated with electricity yielded better results, both in quantity and quality, and were not infested with phylloxera, while the other fields were.

Mr. Fuchs, says the journal, has demonstrated that electricity increases the fertility of the soil. It is not sufficient to simply conduct air electricity to the earth, but there should be a direct metallic connection of the electric conduit with the main stem of the plant. On a field of about 21½ acres five masts are erected, the tops of which are supplied with an arrangement for accumulating atmospheric electricity. These accumulators are connected with each other by wires. Wires are laid in the soil about 1½ feet deep, forming an evenly distributed metallic net. Every accumulator is connected with this metallic net by a wire running along the mast. Short wires connect with the plants, the free ends being stuck into the stem or into the main root thereof.

AGAIN THE STOVE CAPTAIN.

BY M. D.

Notwithstanding the somewhat facetious comment of another contributor, the article entitled "A Stove Captain Needed," is exactly pertinent to the situation. That manufacturer believes just as others do who have read the testimony of Mr. Schwab. The salvation and prosperity of the stove industry depend upon systematic business methods, which can best be reached through organization. "Every man for himself" is—well, Washington said, "Anarchy is the severest of despots." An iron clad rule is better than no rule; but to give force to any rule those who are to observe it must be subject to some stronger power than the out of date "gentlemen's agreement."

It is probable that those who favor a "stove combine" are weary with the efforts to reach an agreement that would prove profitable, and the failure to carry it into effect. They recognize the fact that further efforts to secure united action that would bring living profits to the stove trade would be futile. Hence they favor the combine which would have a hold on every fellow's purse strings, for the good of all; or, the skeptic might add, for the good of those who can manipulate it for their personal prosperity. But, so far, enough of the stove manufacturers have not favored the combine to carry it into effect. The men have got to be imbued with the spirit of the cause before they enlist, and until they enlist the captain is of less necessity than the recruiting officer. However, a captain who wants a company, and in whom the men have confidence, can exert a strong influence to draw them in.

There can be no doubt that the captain can be found; but if he is well known, of the right capacity and possessed of the essential qualifications, he will probably be found running his own business very profitably without too much exertion, and will be indifferent to the taking up of a task that promises to tax his greatest powers, largely for the benefit of others who are not securing the cream of what some are pleased to designate as a declining trade, at least so far as heating stoves are concerned. There are readers of *The Metal Worker* who know the men at the head of the stove industry to a hair's breadth, and they might, if they favor the combine, send in their nominations for "A Stove Captain." If it did no other good, it would at least show some of our prominent men what their competitors think of them, and that too while they live and before it is too late for them to enjoy the gratification.

THE PENNSYLVANIA STOVE TRADE.

Trade conditions among the stove manufacturers and dealers in Philadelphia and vicinity are considered satisfactory. The very favorable conditions of the first half of the year, however, are not likely to be repeated during the second half. The anthracite coal miners' strike has crippled the trade in the mining districts to a very large extent, and even if an early settlement was reached between the operators and miners the effect on the trade would be too late for any material benefit during the coming season. The shortage of pig iron as well as fuel has been the cause of a great deal of anxiety on the part of manufacturers, and deliveries on some lines of goods are pretty far behind. The first six months showed in almost every instance an increase in business over the previous year; in some instances it was as high as 75 and 80 per cent. Orders on the books of some concerns at this time are numerous and represent in instances, almost the capacities of the plants on some particular lines. The manufacturers, however, are not so well satisfied that all these orders will remain on the books. Many have already been countermanded, and if the anthracite miners' strike continues for any length of time there is a prospect that many more will be, or at least that shipment will be deferred for some time.

The trade in the anthracite region is practically done for this season, and in the general territory about Philadelphia the price of fuel has advanced to such figures

that in many cases its use will be almost prohibitive and the old stove will be compelled to go through another winter's campaign because fuel is so much higher.

Trade in gas and gasoline stoves has been very brisk all the summer, this branch of the trade having been materially benefited by the shortage and price of coal, and some difficulty has been occasioned by the inability to get prompt deliveries.

With the improvement of the coal strike situation will come a better condition of the stove trade. At present the trade are quietly awaiting that event in the hope of improved general conditions and orders for shipments of goods.

Mott's Ranges and Furnaces.

A handsomely printed catalogue has just been issued by the J. L. Mott Iron Works, 84-90 Beekman street, New York City, in the interest of their coal and gas and combination coal and gas ranges, fire place heaters, gas ranges and hot air furnaces. The catalogue is specially well adapted to help those who are catering for the work of architects and builders. It is illustrated by handsome half-tone engravings, the first showing the Defiance combination coal and gas range, which is especially adapted for use in fine residences. The picture shows the oven for the coal fire on the left, with the fire chamber between it and the gas oven on the right, giving it the appearance of a large double oven range, with a large warming closet above it. There are six holes over the coal range, two being immediately over the fire. The fire chamber is provided with a large feeding door and equipped with a labor saving grate with a sifter grate and a large ash pan below it. The gas range has four burners on the top, with a large oven and a broiler beneath. A broiler is also provided above the range, increasing the cooking capacity. The range is equipped with a gas water heater for use in summer when the coal range is not running. Pictures of the various parts, with detailed description, enable this fine new cooking apparatus to be thoroughly understood.

The Claremont is a single oven coal range, with a complete gas cooking apparatus, including broiler and oven above the four cooking holes on the top of the range, provided by a gas hot plate, which can be let down on the top or swung up against the back when not needed. Several pages show a variety of French ranges for fine residences and hotels and for yachts and ships, being made in sections so that they are capable of being extended to provide any desired cooking capacity. The regular Defiance cast iron range, of the double oven type, is shown with high closet and set between jambs, and also with canopy.

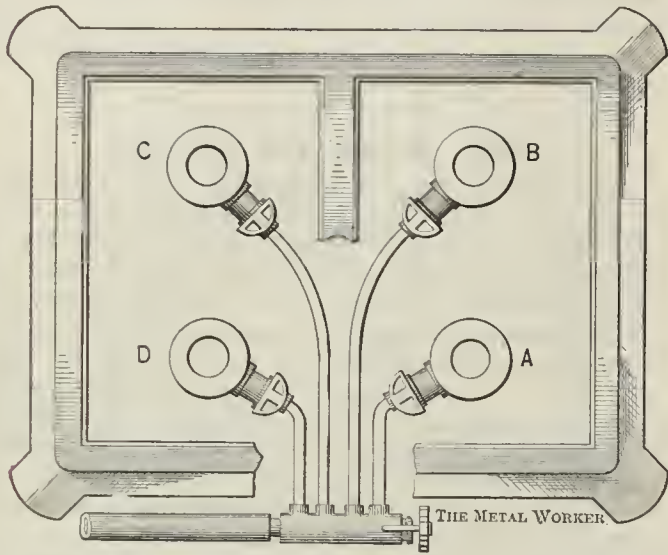
A number of pages are devoted to the New Defiance range with single oven right or left fire, equipped with oven thermometer and all the modern conveniences. The Claremont single oven range is also shown in a variety of styles, and several pages are occupied by Mott's gas ranges, with oven and broiler below, or a broiler on the side; also some with a gas water heater on the side. The Social and Osborne fire plate heaters are handsome in design and well calculated to meet the requirements of those who cater for a high class of trade.

Mott's Star and Comet hot air furnaces, both portable and brick set, are shown in a variety of sizes. The construction of these furnaces not only presents a large air heating surface, but also provides for a long fire travel to secure both economical and effective heating. The catalogue presents a fine line of high grade goods and should prove interesting to the trade.

An 18-page pamphlet sent out by Janes & Kirtland, 725 to 727 Sixth avenue, New York City, sets forth the merits of the Beebe Ranges and Furnaces, which are manufactured in extensive assortment. The Ranges are made both right and left hand and in portable form, as well as for brick setting. Some are shown with gas cooking attachment, while others have hood and plate shelf. Accompanying the pamphlet is another describing the Beebe Furnaces, which are also made both in portable form and for brick work.

Combination Gas or Vapor Valve.

Fox & Guese, 1½ Ashley Block, Michigan and Jefferson streets, Toledo, Ohio, have brought out the combination gas valve herewith illustrated and have made application for a patent. This valve is designed for use in operating gas ranges. The construction is such that a single wheel valve will control four burners or less, thus



Combination Gas or Vapor Valve.—Fig. 1.—Application of the Valve to a Range.

avoiding the use of the separate valves and a great deal of the piping now found on gas ranges. This valve has four ways for the passage of the gas through a hollow key which is drilled to correspond with an indexed wheel.

Referring to the illustrations, Fig. 1 shows the application of the valve to a range. Fig. 2 is a longitudinal

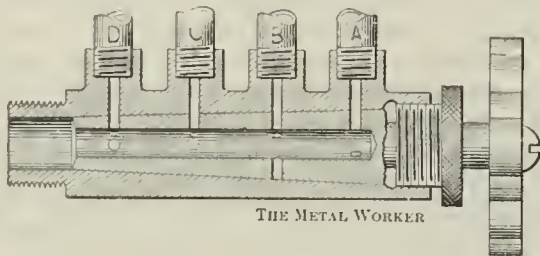


Fig. 2.—Longitudinal Section of the Valve.

section of the valve, showing the arrangement of the holes in the hollow key for the passage of gas to the pipes connecting with the burners. The pipes are lettered to correspond with the lettering of the burners on the range. Fig. 3 shows the arrangement of the holes on the hollow key, the same lettering being continued.

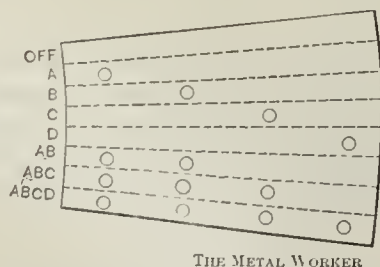


Fig. 3.—Arrangement of Holes on the Hollow Key.

This shows how the turning of the wheel shuts the gas off completely; operates separately burner A, B, C or D; operates two or three burners at one time, or operates all of them. Fig. 4 shows the valve and its parts, 1 being the valve complete, 2 the indexed wheel, 3 knurled nut for holding the key and take up, 4 the hol-

low key with drilled holes to suit the indexed wheel, 5 the shell provided with a ½-inch pipe thread, 6 screw for holding the indexed wheel on the key shank and 7 a leather gasket. The valve can be turned either way,

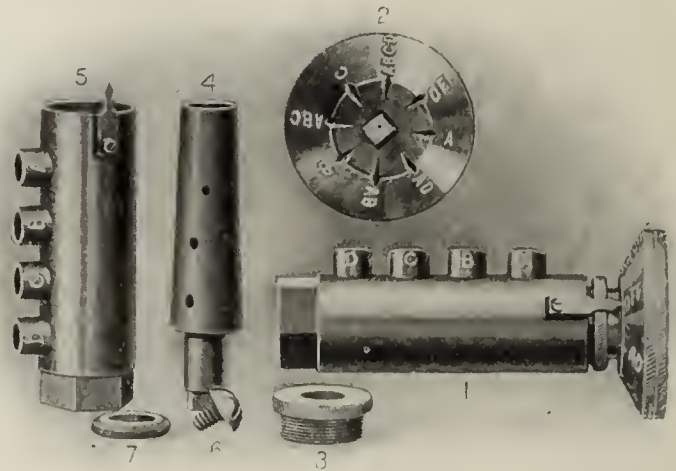


Fig. 4.—The Valve and Its Parts.

an index finger on the side of the shell showing how the wheel is set.

St. Clair Stoves and Ranges.

In a green, flexible cloth cover bearing a design showing the trade-mark of the St. Clair stoves and ranges, the Belleville Stove Works, Belleville, Ill., are sending to the trade a 184-page catalogue of their latest products. The catalogue opens with some important information about the risk of shipments, terms, instructions for settling breakages with the railroad companies and directions for setting up their apparatus. The first place in the catalogue is given to the St. Clair steel ranges, which are made in a variety of styles for hard and soft coal and wood, with reservoirs and hot closets, one range being shown as a combination coal and gas range. The Florence, the Columbia, the Household, the Active A and the St. Clair are ranges of similar construction and excellence. The Century, Sterling, Splendid and Select are steel cook stoves of the leg type and of a variety of styles and equipment. The next section of the catalogue, which is devoted to cast iron ranges, opens with the Monarch St. Clair, which is furnished with all the usual conveniences and appurtenances of high grade ranges. The Pacific St. Clair and Comet St. Clair are small square ranges, with six and five holes on the top and with end ash pit. The Novel, Coral, Wonder, Empire, Agate, Welcome and Crown are other square ranges of varied design and capacity, giving the dealer who handles this line a great variety to offer to his trade. Thirty-eight pages following are devoted to flat top cook stoves, the line including a great variety for both hard and soft coal and for wood burning, with reservoirs and high shelves, and adapted to meet the requirements of a varied trade.

The parlor stove section shows the Sterling, Charm, Laurel, Incandescent, Prominent and Capitol St. Clair. Some of these are of the self feeding and others of the air tight type, and all are of handsome design and elaborate embellishment. The catalogue also shows a variety of oak stoves and air tight heaters, followed by open fires and globe and laundry stoves. The last pages are occupied by a great variety of wood burning stoves of the air tight and box type, followed by tea kettles, spiders, sugar kettles and tin trimmings, also elbows, dampers and stove supplies. A few pages are devoted to cuts, that can be furnished for advertising purposes, and broken views are given of different types of stoves with the parts numbered and named to aid in securing repairs without the annoyance of errors.

THE MOUNTAIN CITY STOVE COMPANY of Chattanooga, Tenn., are erecting a new warehouse.

Reineke-Wilson Company.

In "Trade Topics," a little publication issued from time to time by Reineke-Wilson Company, Pittsburgh, Pa., the growth of their business from its establishment in 1870 is described. In June, 1899, the old firm were merged into the present incorporated company, the plumbing and gas fitting branch of the business was dropped and the company confined themselves entirely to wholesale and retail merchandising. In a general way the business is divided into three departments, chandeliers, gas appliances and pumps, the demand for which has developed to such an extent that eight four-story buildings, aggregating 38,000 square feet of floor area, are now occupied by the company. In their gas appliance department are handled ranges, heating stoves, fire place heaters, furnaces, burners and all supplies and appliances for natural and artificial fuel gas. Their new factory at Johnstown, Pa., the Century Stove & Mfg. Company, will be devoted exclusively to the manufacture of goods for this department. In the pump department are handled pumps of all kinds, wind mills, tanks, hydrant or garden hose, lawn sprinklers, &c.

The Dayton Adjustable Stove Pipe Thimble.

Among the specialties manufactured by Kramer Brothers, proprietors of the Dayton Stove Repair Works, Dayton, Ohio, is the Dayton adjustable stove pipe thimble, a broken view of which is given herewith. As will be seen by the cut, this thimble is provided with



Dayton Adjustable Stove Pipe Thimble.

a coil spring adjustment. The thimbles are made in diameters of 5, 6 and 7 inches, with 4 to 8 inch and 6 to 12 inch extensions, making six separate sizes. The ceiling and register plates which go with the thimbles are provided three plates to a set, in 5, 6 and 7 inch diameters.

ODD PLATES.

W. H. COLEBROOK, SONS & Co., Syracuse, N. Y., are sending out another of their unique advertising cards in the interest of Colebrook's Crown Asbestos Furnace Cement. Attached to the top of the card is a pair of spectacles, with eyes looking through them, and the legend "Put on your specs and peer into the merits of Colebrook's Cement."

"A PRIMER ON HEATING," that will be of special interest to the Furnace trade, and a catalogue of the Stamford Hot Air Furnaces have been received from the Stamford Foundry Company, Stamford, Conn. The primer not only gives a clear idea of the construction and operation, but also a detailed description of the Stamford Hot Air Furnace. It will also enable those who sell Furnaces to explain many of the features that are of greatest interest and importance to the purchasers. The 12-page catalogue is devoted to this Furnace, which is an all cast iron construction, and is also made as a Combination Hot Air Heater and Hot Water Heater. The Comet, a high grade Furnace of the return flue steel radiator type, is also given several pages of description and illustration.

THE MISSISSIPPI VALLEY STOVE WORKS, Clinton, Iowa, have resumed operations with a full force, after their temporary shut down. The company are well supplied with orders to keep them busy until the Christmas holidays.

THE MINNEAPOLIS STOVE COMPANY, Minneapolis, Minn., contemplate having a large exhibit at the Minnesota State Fair for the benefit of their customers and the retail trade. The exhibit will cover their entire line of Stoves and Ranges.

A VERY pretty bit of trade literature, under the title of "Homes of Comfort," has been issued by the Thatcher Furnace Company, 240 Water street, New York. It is written in a very entertaining manner and is enlivened with choice selections of verse. The early history of house heating and an account of the invention of the primitive cast iron apparatus used for this purpose lead up to the essential modern features that are possessed by the Thatcher Warm Air Furnace. The text is enlivened by handsome half-tone engravings of old fire places and of Dr. Franklin and his inventions, and the progressive story is graphically told until the modern Furnace warmed and ventilated home is presented. Many luxurious residences heated by the Thatcher Tubular Furnaces, which have stood the test of more than half a century, are also illustrated. The distribution of this little booklet should tend to an increasing use of the Thatcher Furnace heating system.

A DISPLAY POSTER, which is being sent out by the Michigan Stove Company calling attention to Garland Stoves and Ranges, is intended for pasting along the curb, on fences and in fact any place where there is room. The posters are long and narrow in shape, and are printed in a variety of colors. They are graphically described by the company as "gutter snipes."

A NEAT four-page folder published occasionally by Walker & Pratt Mfg. Company, Boston, Mass., and known as the *Crawford News*, presents a great deal of matter relating to Crawford Stoves and Ranges, which are manufactured in sufficient variety to meet all reasonable requirements. The first thing to greet the eye of the reader, as he scans the first page of the folder, is the statement that this year's Crawford Oak Stove has a new feature in the shape of a nicked skirt or screen, which is detachable on the same plan as the removable rails of Crawford Ranges. The skirt is made of four sections, each part lifting off separately. This, it is claimed, will be the novelty of the season in Oak Stoves. Another taking feature of the folder is the ground plan of the company's factory, with recent additions shaded in red. Their buildings cover about 3 acres of ground and afford exceptional facilities for manufacturing the various lines of Crawford goods.

THE RICHMOND PATTERN WORKS, Richmond, Va., of which E. M. Liphart is proprietor, announce that owing to the demands of their large and constantly increasing business they have been compelled to extend their manufacturing facilities. They have therefore purchased a commodious establishment on North Eighteenth street, where they will conduct operations in the future. Their machinery and entire equipment are of the modern type, and with increased facilities the concern will be able to turn out their product with greater ease than heretofore. Attention is given to all kinds of Pattern work, from the simplest to the most intricate design. As the company put it, "No order is too small for our best attention—none too large for our capacity."

THE B. C. BIBB STOVE COMPANY, Baltimore, Md., have remodelled and improved their Arcadia line of Ranges for this season. This line has been on the market for the past 15 years, and has had a large sale and gained a good reputation with the public. It is made in three sizes, as a five-hole Range, under the name Arcadia, with 14, 16 and 18 inch ovens, the 14 and 16 inch having 7-inch boiler holes. When sold as a six-hole Range it is only made in two sizes, with 14 and 16 inch ovens; this style is called the Cecil. The five-hole size when sold with water back is called the Geymont, and the six-hole style with water back is called the Avalon. Selling the Ranges thus under different names avoids any danger of mistakes in ordering repairs, as is the case when styles and sizes are all named alike.

CHAS. C. HEATH & Co., Philadelphia and Baltimore, have adopted an excellent way of designating the particular Stove Repairs and Fire Brick shipped by them.

Carefully affixed to each article is a special tag bearing the name of the Stove for which the part is intended. This plan is of particular advantage when a number of parts are shipped for different Stoves at the same time, and it will no doubt be appreciated by the purchasers of Repairs as it obviates the confusion and mistakes liable to occur when these goods are shipped by the old methods.

S. P. HUMPHREY, Ironton, Ohio, is erecting a foundry, 50 x 75 feet, with adjoining building 25 x 50 feet, for the manufacture of small Castings for Stoves, Grate Bars, &c. Associated with Mr. Humphrey are J. C. Snyder and others.

A FEW FACTS concerning Furnaces and Ranges are contained in the 32-page pamphlet, of a size convenient to carry in the pocket, which is being sent out by Floyd, Wells & Co. of Royersford, Pa. The matter consists essentially of an illustrated description of the Bengal, Rosemont and Hope Furnaces and of the City Irving and Home Ranges. The matter is presented in a way to interest not only the dealer handling the goods but the house owner who is thinking of equipping his home with either heating or cooking apparatus, or both. Accompanying the pamphlet is a four-page folder describing the Oak Ringgold, made both as a single and double Heater and intended for using hard coal, soft coal, coke, or wood. The Stove has recently been remodeled, special attention having been given to features requisite to bring it into the front rank of high grade oaks, both in construction and design. The gas generator is a special feature, the device making it possible for the air to be admitted into the fire pot, permitting the oxygen to freely mingle with the gases liberated from the coal. The ornamentation includes the judicious application of nickel, which forms a pleasing contrast with the black iron surfaces.

For the purpose of accommodating their increasing business, the Odin Stove Company of Erie, Pa., are erecting an addition 40 x 60 feet in size.

THE SOUTHERN STOVE WORKS of Richmond, Va., set forth the merits of their leading lines of Ranges, Cook Stoves and Heaters in a neatly printed catalogue of 48 pages which they have recently distributed. Directions for operating Stoves are given, as well as numerous suggestions respecting chimneys, drafts, &c. The Jefferson, which occupies the leading place, is a first-class construction of pleasing exterior and embodying the modern features. The Lexington, a six-hole Range, is offered in several styles and sizes adapted for coal or wood. Other members include the Elko, the Maud, the Afton and the Eli. A substantial four-hole Cook Stove is known as the Fitz Lee, and is referred to as having established a reputation wherever used. A varied assortment of Heaters is presented, as well as a line of Stove Hollow Ware. The gradual growth of their business has compelled the company to enlarge their plant, thus placing them in a position to more promptly than ever before meet the requirements of the trade.

THE advertising department of the Michigan Stove Company, Detroit, is as busy as the proverbial bee issuing novelties, all of which bear the familiar impress of the Garland trade-mark. One of the latest products of this ingenious system is a paper pocket case, under the flap of which provision is made for the name and address of the owner, together with other data for ready identification. The case is large enough to hold a number of documents.

SOME idea of a fiery temperament is gained from a glance at the Bengal tiger used by Floyd, Wells & Co., Royersford, Pa., to typify the latest heat that is developed when their Bengal Hot Air Furnaces are installed by the dealers and the ardent appreciation expressed by customers who delight in their possession.

CHARLES C. HEATH & Co. of 136 and 138 North Second street, Philadelphia, Pa., in soliciting the trade orders for Stove Repairs, make the postal card announcement that they carry in stock Repairs for 20,000 different kinds of Stoves, Ranges and Heaters. They state if the dealer orders from them and saves 200 premium shipping tags they will give him, free, a 1000-mile mileage book on any

railroad. They also announce to the dealer that if he will return the postal card with his order for Stove Repairs they will mail him with their compliments five premium tags. Incidentally they mention the fact that they manufacture Asbestos Wick Rings for all Blue Flame Oil Stoves and are sales agents for the Aluminum and Electric Oil Heaters.

Nebraska Retail Hardware Dealers' Association.

The summer meeting of the Retail Hardware Dealers' Association of Nebraska was held in Lincoln, Neb., on Wednesday and Thursday, August 6 and 7. The meeting was called to order by the president, C. W. Morton of Omaha. After prayer Governor Ezra P. Savage made an address of welcome, expressing his pleasure at meeting so representative a body of Nebraska's business men. The Governor said his first start in business was in a hardware store, and this fact made his feeling toward them of the warmest. Mayor H. J. Winnett, being introduced, welcomed the members heartily to Lincoln and President Morton responded in a happy vein.

President Morton then appointed committees as follows:

NOMINATIONS: M. E. Halght, Crete; L. F. Holloway, Fremont; Henry Veith, Lincoln.

PRESS AND RESOLUTIONS: Frank Hoecker, Friend; Nathan Roberts, Omaha; Max Uhlig, Holdrege; J. C. Cornell, Ord; Ed. Johnson, Clarks.

Sergeant-at-Arms, H. T. Moore of Alma, Neb.

A few informal remarks followed in open session, participated in by Secretary Hall of Lincoln; H. Henke, Grand Island; Nathan Roberts, Omaha; Morris Hussie, Omaha; Henry Veith, Lincoln; J. C. Cornell, Ord; Thomas Bartlett, representing a stove manufacturer; Elmer E. Henkle, representing a Chicago jobber, and others of the members, in which much of interest was discussed, and the meeting adjourned until the next day.

In the evening, according to plans arranged by the Reception Committee, the dealers and their families were furnished complimentary tickets and escorted to Lincoln Park and enjoyed a rare treat in the address given by Gen. Fitzhugh Lee. After the address an informal banquet was tendered by the same committee.

At 8 o'clock on Thursday morning the dealers were taken in a body in carriages to the Experiment Station of the Nebraska State University. The return from the farm was timed so that the meeting was called to order at the State Capitol promptly at 10 a.m.

The minutes of the last meeting were read, and after a short discussion approved. After roll call the secretary's report was read, showing a balance in the treasury of \$146.10.

Letters from absent members were read, and then followed a general discussion. Many of the older members gave practical illustrations of good results obtained by following certain business methods; J. F. Goehmer and S. C. Cook, competitors, of Seward, told of 15 years spent in business enmity, and of three years just past in business friendship, the latter resulting in good to both dealer and customer. It was a lively and enthusiastic meeting. Many questions were asked by dealers who realized the opportunity to get the benefit of some other dealer's expensive experience.

The meeting was called to order at 2.30 on Thursday afternoon by the president. The Press Committee reported resolutions of thanks to various persons for courtesies shown and to the local press for assistance rendered. Reports of the other committees were for the benefit of the members only, and all reports were approved and ordered spread on the records. It was also moved to have all memberships received up to and including August 8, 1902, enrolled as charter members.

The next annual meeting will be held at Lincoln at a date to be decided upon by the Executive Committee. The president appointed as delegates to the National Association Nathan Roberts, Omaha, and Harry J. Hall, Lincoln.

Mr. Corbin, representing Charter Oak stoves, St. Louis, had a fine display of his stoves at the Lindell Hotel, and planned gold plated ranges on the coat lapels

of those who called to see his display. R. H. Riffel, representing the Gold Coin Stove Works, had an elegant display of his 1902 samples, and was kept busy showing the advantages of Gold Coin. The Acorn badges distributed by the representative of Rathbone, Sard & Co. called many visitors to examine the samples, which had been arranged in artistic grouping in one of the parlors of the Lindell. Many other representatives of manufacturers and jobbers were present to assist in making the visitors feel at home and caused members to feel gratified by the interest shown in their meeting.

Cash Prizes to Employees.

The Coldwell Lawn Mower Company, Newburgh, N. Y., each year set aside a certain sum of money to award as cash prizes to their employees for suggestions of a business character, either in regard to their conduct or as to the details of the work. These suggestions may be for improvement in manufacturing, for cheapening the cost of production, or in fact for anything in the way of an improvement in the business

a demand which consanguinity and the voice of justice requires as a safeguard for the employees of the Coldwell Lawn Mower Company.

As many of the suggestions made are good ones, and thoroughly practical, they are generally adopted by the company. From time to time, as the suggestions are made, they are handed in at the office, dated and filed away. At the proper time the envelopes are opened and the winners of the prizes determined upon.

Sometimes it will occur that two men will make precisely the same suggestion, although couched in different words. In a case of that kind the man whose suggestion bears the earlier date is awarded the prize. This system of cash prizes is a highly commendable one and reflects great credit upon the company and proves beneficial to the men in its employ.

The Archer Steel Wheelbarrow.

The Archer Iron Works, Chicago, manufacturers of ornamental and structural iron work, have issued a catalogue with special reference to the steel wheelbar-

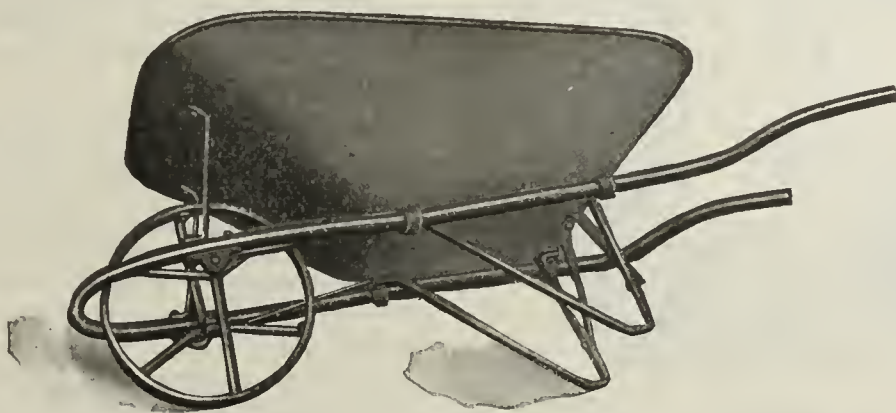


Fig. 1.—The Archer Steel Wheelbarrow.

of the company. These prizes are awarded on the first of January and the first of July of each year. The last awarding of prizes was on the afternoon of July 1, when Thomas Coldwell, the president of the company, announced the awards for the last six months. This he did in his usual felicitous manner, speaking in a commendatory way of the men of the works and of their work. The first prize was of \$25. There were two of \$10 each, four of \$5, and four prizes of \$2.50 each. This makes a total of \$75 distributed to employees of the company.

Nearly all of the suggestions made for which prizes were awarded were for something of a mechanical or technical nature pertaining to the manufacture of lawn mowers. But there was one notable exception to this rule. One of the two \$5 prizes awarded to Joseph Coldwell, brother of Thomas Coldwell, was for a suggestion in regard to "First Aid to the Injured." The suggestion on this subject was made in the following words:

As a simple duty that an employer owes to his employees, and as a humane act, I think it absolutely necessary that some measure be adopted by the Coldwell Lawn Mower Company, such as first aid to the injured, whereby in case of accident, which may occur at any time in the factory, there may be an immediate assistance and intelligent help from one or more persons appointed for that purpose, who have had experience and thereby would know just what the emergency required for the alleviation of the suffering of the injured until the arrival of a physician.

Common justice to the employee should dictate that some such method of relief should be adopted at this writing. I have in mind now two persons in the employ of this company who are men of experience and who have had practical knowledge of the first aid to the injured, both having had a course of lectures on the subject, and one being an exmember of the ambulance corps.

I therefore suggest that these two gentlemen be consulted as to the necessary outfit for the first aid to the injured, and that the said Coldwell Lawn Mower Company procure and maintain at their own expense such outfit as may be suggested by the gentlemen referred to. The expense would be light and would meet

rows which they make and shown herewith. The wheels have the Archer tubular barrels, made of wrought iron; the spokes are of $\frac{3}{4}$ -inch round rod, three of which are strongly welded, forming one-half of wheel. These verge symmetrically from bearing to periphery,

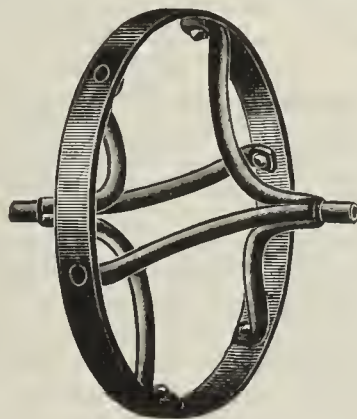


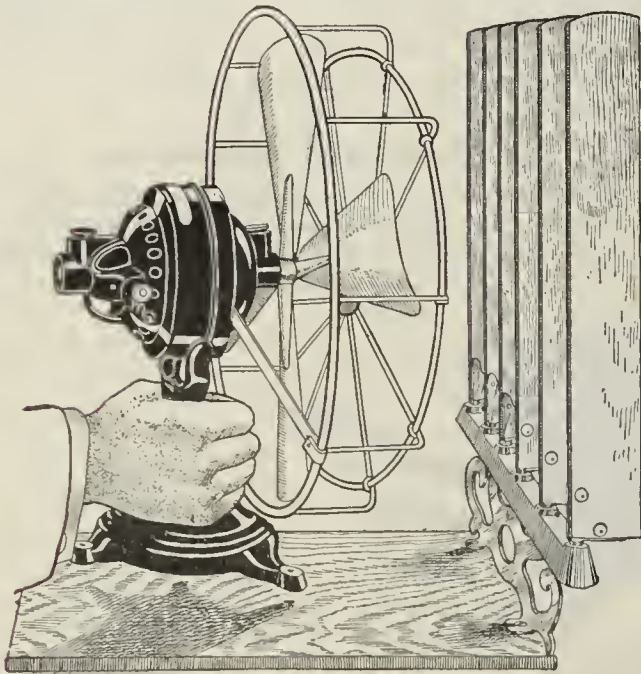
Fig. 2.—The Archer Barrow Wheel.

giving a breadth across from hub to hub of 13 inches, which is referred to as a feature of great strength and as preventing upsetting while loading. The rim is made of $1\frac{1}{2}$ x 3-8 inch iron, and spokes are riveted to rim with 3-8-inch rivets.

THE F. H. SMITH MFG. COMPANY, Chicago, Ill., are making the "Best Yet" Riveter, which is made of malleable iron with case hardened steel plunger and anvil. It is provided with an automatic adjustment for different lengths of rivets; is fitted with a pocket for holding rivets; a punch for strap work, and is neatly finished in black japan and gilt. In using the machine the rivet is dropped head downward into the pocket, the work inserted between the pocket and plunger and the lever pressed. The company make a large line of riveting machines, and will send illustrated catalogue on request.

The Degge Air Diffuser.

The air diffuser, shown herewith is for use in connection with electric fans. The castings are nickel plated and the blades are of Spanish cedar. The diffuser is designed to control the draft from the fan, and while in no way lessening the power of the fan in projecting its current of air, it is remarked the blades may be turned so as to spread the current over a wide space, or diffuse it over the entire room, and agitate the air as far as the power of the fan may be able to send it; or the current may be concentrated at any point.



The Degge Air Diffuser.

The diffuser may be attached to any fan, it is stated; also that it is neat in appearance, simple and effective. The device is offered by Degge & Musick, St. Louis, Mo.

Pieced and Stamped Tinware.

Cooney & Geiger, 19 and 21 East South street, Indianapolis, Ind., have issued their illustrated catalogue, No. 7, covering their line of pieced and stamped tinware, sheet iron goods, hollow ware, enameled ware, &c. The catalogue is a substantial book of 160 pages containing a large number of illustrations, and is well printed and arranged. The first 20 pages are devoted to stamped tinware of about every kind known on the market. These are followed by pieced tinware, including wash boilers, tea kettles in tin and copper, coffee pots and boilers, tea pots, sauce pans, pails, dinner buckets, washtubs, sprinklers and measures, milk cans and dairy goods of all kinds, with a long line of cooking utensils and household tinware. Japanned ware occupied the next section of the catalogue. In this department some handsome specimens of decorated water coolers and toilet sets are presented, together with canisters, bread and cake boxes, flour bins and sifters, bath and foot tubs, tea trays, dust pans and a variety of other similar goods. A line of steel enameled ware, including tea and coffee pots, wash bowls, kettles, pudding dishes and sauce pans, milk and rice boilers, water pails, cups, measures, funnels, &c., occupy the next section.

The latter portion of the book shows a considerable variety of miscellaneous goods, including Empire steel skillets and griddles, Acme fry pans, cast iron pots and kettles, ham boilers, waffle irons, bowls and other hollow ware. Then come coal hods, four-pieced and adjustable elbows, Perfect corrugated elbows, stove pipe, ventilators, flue stoppers, roasting pans, dripping pans, stove pipe dampers, coal shovels, poker, lifters and tongs, stove polishers, stove boards, oil cans of various patterns, lanterns, wringers, coffee mills, freezers and a variety of stove supplies. A page is devoted to the company's Centennial rain water cut off, and in the concluding pages are shown a line of table cutlery, carvers, butcher knives, &c. The whole concludes with an alphabetical index of the contents.

Stove and Hardware Dealers.

THE KING CITY HARDWARE COMPANY have succeeded Slemmons Bros. and Lane & Moore Implement Company, both of King City, Mo., and will continue the retail business in Stoves, Tinware, Shelf and Heavy Hardware, Agricultural Implements, &c.

THE CASH HARDWARE STORE, Lewiston, Idaho, have recently increased their capital stock to \$50,000. The company do a wholesale and retail business in Stoves, Shelf and Heavy Hardware, Tinware, Agricultural Implements, Paints and Oils, Glass, Sporting Goods, Harness, Vehicles, &c., and also conduct a tinning, heating and plumbing department. The establishment formerly occupied by the concern was burned out February 14 last, entailing heavy loss. Several months since they took possession of their new warerooms, which front 100 feet on D street and 150 feet on Fifth street, the total floor space being over 40,000 square feet. The arrangement of the main store room is very convenient and attractive, low shelving of neat and original design being a special feature. A well built and convenient gallery encircles the storeroom. The company solicit quotations, &c., from manufacturers in their respective lines, as noted above.

GEO. COE has sold out his business in Athens, Ohio, to F. E. Goldsberry, who will continue the sale of Stoves, Hardware and Sporting Goods at the old stand.

THE Hardware store formerly conducted by Spratt & Haggard, Fairfield, Iowa, is now being conducted under the style of Spratt & Johnson. The line covers Stoves, Tinware, Shelf Hardware, Agricultural Implements, Wagons, &c.

E. L. CONDRON, Portsmouth, Iowa, has disposed of his Stove, Hardware and Farm Implement business to M. J. Schafer, formerly of Dunbar, Neb., who will continue at the old stand.

G. W. BRUSKE, wholesale and retail dealer in Stoves, Hardware, &c., Saginaw, Mich., is building a large addition to his establishment. The new building will be a four-story brick structure, with 50 foot front on Lapeer avenue and 90 feet on Warren avenue. It will be connected with the building now occupied by Mr. Bruske, which fronts 25 feet on Genesee avenue and 25 feet on Lapeer avenue, and is about 100 feet long. It will have all modern improvements, such as electric elevator, steam heat, &c. The ground floor of both buildings will be used as salesroom and office. The other floors and basement will be used as storage and packing rooms. Mr. Bruske commenced business in September, 1867, and the volume of his trade has increased from year to year. With the addition referred to he expects to more than double the wholesale and retail trade now done. The new building will be completed and occupied, it is expected, by October 1.

THE MYERS HARDWARE COMPANY are a new concern at Blackburn, O. T. They are retailers of Stoves, Tinware, Shelf and Heavy Hardware.

FELTUS BROS. have purchased the stock of Geisenberger & Baker, Natchez, Miss., and will continue the wholesale and retail business in Stoves, Tinware, Shelf and Heavy Hardware. Agricultural Implements and Sporting Goods. They have added a line of Paints to the former stock.

MCCULLOUGH HARDWARE & SADDLERY COMPANY have succeeded W. McCullough in the Stove, Hardware, Agricultural Implement and Sporting Goods business in Cleburne, Texas.

W. H. WORDEN, in the Stove, Hardware and Farm Implement business in Garnett, Kan., has been succeeded by Keezel & Worden.

THE eighth annual convention of the Michigan Retail Hardware Dealers' Association met this week at the Hotel Cadillac, Detroit. More than 50 members were in attendance. There were also a number of delegates from the National and various State associations, as well as representatives of manufacturers and jobbers.

INSURANCE AS RELATED TO THE ACETYLENE GENERATOR MANUFACTURER.

BY L. J. WING, NEW YORK.

Your committee selected me to take up the fight with the greatest Goliath the acetylene interest has to combat with. Well, I obeyed orders and took up the investigation. I first wrote to a friend of mine, the president of one of the large insurance companies (who, by the way, at my request, had helped to do away with the numerous boards of examiners and their charges from \$50 to \$75 that we formerly had to deal with and now is condensed with the National Board, with offices in this city), and stated what I had been asked to do and that I would appreciate any information he could give me. I received a courteous answer, in which he stated that W. R. Merrill, Jr., secretary of the Underwriters' Laboratories, Chicago, was thoroughly informed on the subject and he would recommend me to see him and he would give me the information as to present requirements. I have had a long interview with Mr. Merrill since my arrival. He claims that the insurance companies are not opposed to the acetylene generators and that the rules and regulations are in the same lines as for electricity and are for the protection and benefit of the manufacturers and users as well as for the insurance. He says they (the engineers) are glad to get points and suggestions from manufacturers for changes and improvements in the rules and regulations. He gave me a number of their latest booklets and asked me to distribute them and confer over the rules, &c., and if we would suggest any changes that would help the case they would like it much. He claims that electrical architects and manufacturers of other lines assist them in their various lines. He suggested that this association appoint a committee of its members for the purpose of assisting them to get a more perfect set of rules and regulations.

I think that so far as Mr. Merrill himself is concerned he will do what he can to help the acetylene interest. How much authority or power he has I do not know, but from information given me by our worthy president it seems that the insurance authorities had got out the rules, &c., with the words "acetylene gas machines must be installed outside of building insured," and that it took a good deal of work to get "must" changed to "should." This being the case it looks very much as if the antagonistic financial interests had a strong hold on the said insurance authorities, and whether this influence will be strong enough to make us more trouble in the near future is something for us to consider.

ACETYLENE INTERESTS WANT FAIR TREATMENT.

It seems to me that acetylene interests have not received that fair and reasonable treatment they are entitled to by the insurance and city authorities. It is to be hoped that hereafter the manufacturers who have their money invested in acetylene and the people who wish to use acetylene will receive more liberal, just and reasonable treatment from the insurance companies and from city authorities. Having a good deal of money invested in acetylene I have naturally watched all sides very carefully, and particularly the question of insurance and accidents. We are told by insurance and city authorities, and by those whose financial interests are opposed to it, that it is dangerous both as to fire and accidents to life and property. Acetylene has come into quite general use and is daily growing more general. Do the facts bear out the statements made by the parties named? No; most emphatically no; not in either case. How many fires have been caused by the use of generators, as made within the last three years? How much property burned? How many people have been hurt from the use of these generators? A very small amount of property has been burned. A very few, indeed, have been injured. Mind you, the explosions in experimental work on liquid acetylene is not chargeable to or a part of this business.

Let us take up some of the other lights used by the people and almost without question of the insurance and city authorities—oil lamps. Is there a day passes that there is not a fire or an accident in the United States from the use of oil lamps? Do the insurance and city authorities forbid their use inside of buildings? No. Why? How many fires; how much property burned and how many lives are lost by the use of electricity each year? I am informed, by what is considered good authority, that over 40 per cent. of the total loss of fire in the United States is caused by electricity. The insurance companies and city authorities have rules and regulations for electric lighting, &c., but do they forbid it inside of buildings? No. Why?

COMPARATIVE SAFETY OF ACETYLENE.

I once argued the matter before some authorities and brought up these points, and asked why, but got no satis-

factory answer. I finally asked, can it be possible that antagonistic financial interests are behind the unreasonable treatment acetylene received? I hope not, but it looked like what the darkey called "spicious." In New York and some other cities they will allow only 100 pounds of carbide in any building unless in fireproof, isolated buildings and then only 500 pounds. Yet any one can keep barrel upon barrel of alcohol, turpentine, oils, &c. Which is the most dangerous, carbide in iron cans, or oil, turpentine, &c., in wood barrels? I had a conversation with a party who had 18 cans of carbide in the basement of a building that was burned in the city of Washington, D. C. He told me that the building collapsed and that the brick and water were several feet above the carbide and that only one can leaked and that one made no trouble beyond the loss of the carbide. In the great fire at Paterson, N. J., last March, we had a 100-light generator in H. Munger's liquor store. He told me personally that he and others stood in the street watching the fire; it was in the night and a few burners were lit; he said he would hear barrel after barrel of whisky explode but still the lights burned on, although the whisky barrels were within 20 feet of the generator; finally the walls fell on the generator and the lights went out, but no explosion. A few days later I went out and examined the generator. I found that the brick in falling had smashed in the top of the generator and the bell of the gas meter and the fire had burned what gas there was in it and then went out. No explosion. This was proven from the fact that the generator was good enough to repair, which we did, and Mr. Munger is now using the same generator to light his new building. The *Acetylene Journal* of March had a report on this case and stated that it was a Colt generator. I have not seen any correction from Colt's or the *Journal*. I have built generators for some three years and have quite a number in use. There has not been a fire or accident caused by one, so far as I know. I had a friend badly hurt by an oil lamp some ten years ago; since then I have not had one in my house. I am perfectly willing to have any good acetylene generator in my home, whether for ten lights or for 500 lights.

In conclusion, I believe the insurance and city authorities should make rigid rules and regulations for the manufacturing and use of acetylene generators similar to those in use for electricity and then allow their use, the same as electricity is permitted. Examinations by inspectors would also be a good feature and a safeguard. "Tin can" generators should be forbidden.

I would go a little further and say that this association should place itself fairly and squarely on the side of trying to make the business a safe and reputable business, both as to the class of generators, stove burners, and as to the system of doing business, each and every member doing his best to place the business on a safe, sure and profitable basis.

A Vacuum Heating System.

A notable installation of the vacuum system of heating is being made in the new building which the Chicago *Tribune* is erecting in that city. The building is equipped with an elaborate system of air washing, drying and cooling apparatus for both summer and winter use, the heating taking the place of the cooling system in the winter. The plant is being installed by the L. H. Prentice Company of Chicago. It includes 35,000 square feet of radiating surface and there are more than 5 miles of steam piping in the building, which is 21 stories high. Especial care has been taken in running this piping to avoid air locks or water hammer, or any of the other annoying features of a steam heating plant. The radiation is arranged in several sections, the ventilating system being on one section and the heating system for the *Tribune* offices on another section, while the building proper is on still another section, which is piped on the overhead plan. All of the systems, however, are equipped with the vacuum apparatus to remove the air from the mains and the radiators so as to insure not only a quick distribution of the steam, but also an economical heating of the building through low temperatures suited to the weather. This is attainable with the vacuum system of heating, which will circulate a vapor at temperatures much below that of steam under pressure.

THE COLWELL LEAD COMPANY baseball team desire games with any team in the plumbing supply trade in Greater New York. The captain of the team is P. A. Fraser, and any communications addressed to him at 63 Centre street, New York, will have prompt attention.

DEATH OF JOSEPH BOND.

Joseph Bond, president of the American Radiator Company, died August 8 at the family residence, Chicago. In his death Chicago loses one of her prominent business men and useful citizens. Mr. Bond was born at Ware, Mass., February 12, 1852. He was a descendant of one of the oldest families of the Bay State, and the Bond homestead, built about a decade after the landing of the Pilgrim Fathers, still stands at Ipswich, being one of the historical landmarks of the State. Joseph Bond was educated in the public schools, and at the Kimball Union Academy at Meriden, N. H. At the age of eighteen he entered business life. From 1875 until 1880 he was engaged in the hardware trade on his own account at Waltham, Mass. He removed to Buffalo a year later and entered into partnership with J. B. Pierce under the name of the Pierce Steam Heating Company, manufacturing heating appliances. The firm were among the pioneers in this line of industry. He was soon made treasurer of the concern, and that position he held until 1892, when he went to Chicago to assume executive control of the then newly organized American Radiator Company.

The growth and prosperity of this concern are largely due to Mr. Bond's tireless industry, his thorough knowledge of the technical side of the business and his unusual organizing ability. Under his direction as president and chairman of the Executive Committee the company steadily extended their operations and scope, growing to be the largest of their kind in the world, employing 3500 men, and having factories and branches in several cities in the United States and in England, Germany and France. Mr. Bond made a science and an art of his work, exhaustively studying the principles of manufacturing steam and hot water heating materials, and introducing new methods into that special industry. He was recognized as an expert or master in his field of activity.

He was prevented by his close application to business from taking that part in public affairs for which his intelligence and integrity conspicuously fitted him, but he was a keen observer and an interested student of political, economic and social questions. In politics he was a Republican, but he never identified himself with any particular local organization. He was a trustee of the Chicago University and took a deep interest in its progress. He was also a member of the Chicago, Union League, Quadrangle and Ontwentsia clubs, but had little time for club life.

For religion and church affairs he always found time. He was a devout Christian and for years he was a leading spirit in the Immanuel Baptist Church. He became interested in the Bible class of this church and took great pleasure in guiding the young men in that class,

supplementing precept by example and conforming deed to word. He aided many young men in securing suitable employment and in educating themselves for their vocations or pursuits. In a quiet, unostentatious way he thus helped many a young man to help himself, and enabled not a few to continue their special studies at home and abroad. Strict, punctual and methodical himself, he was tolerant, considerate and charitable to others, always kindly and generous, ever full of encouragement and faith in the better part of human nature. He was a Christian gentleman and a Christian business man. Mr. Bond commanded the respect and loyalty of all his business associates, and his employees always found him just, reasonable and sympathetic.

The malady to which Mr. Bond finally succumbed, Bright's disease, first manifested itself nearly twenty years ago. At that time his physicians despaired of his

recovery, but his careful habits and temperance in all things (save work, in which he was intense and strenuous) preserved him and gave him a longer lease of life. His last illness was of three months' duration.

Mr. Bond leaves a widow and two daughters, Mrs. Edgar Goodspeed, wife of Dr. Goodspeed of the University of Chicago, and Miss Louise P. Bond. A brief memorial service was held at the Immanuel Baptist Church, Chicago, on Sunday morning, August 10, and the remains were taken to Buffalo, N. Y., in a special car accompanied by the family. Another special car followed containing prominent officials and employees of the American Radiator Company, among them being the following: C. M. Woolley, Charles K. Foster, W. H. Hill, S. K. Pittman, E. T. Fish-



JOSEPH BOND.

wick, J. D. Erskine, Clarence Carpenter, Eugene Davis, E. G. Ingersoll, W. H. Heffern, B. F. Stall, W. E. Oliver, Louis Bruch, F. R. Mason, S. L. Hopper, J. A. Sheahan, Julia Colohan, Jennie L. Richmond, Alice E. White, W. E. Strong, E. A. Sumner, Jr., H. I. Lord, E. A. May, Richard Matthews.

Funeral services were held on Monday afternoon, August 11, at the Delaware Avenue Baptist Church, Buffalo, conducted by the Rev. O. P. Gifford, pastor of the church, assisted by the Rev. George Whitman of the Lafayette Avenue Baptist Church. The active pallbearers, all from the Chicago office of the company, were Louis Bruch, Charles K. Foster, S. K. Pittman, Edward J. Fishwick, William H. Hill and James D. Erskine.

Among those present at the funeral were A. A. Landon, assistant manager of the Pierce plant, Buffalo; Frank B. Howell, manager of the Bond plant, Buffalo; Frank Le Clerq, manager of the Standard plant, Buffalo; William D. Shockley, manager Detroit plant; Clarence Carpenter, manager Michigan plant, Detroit; A. A. Aiken, manager Titusville plant; S. De Long, manager Steel plant, Springfield, Ohio; Charles C. D. Gott, manager New York branch; Frank J. Bassett, Jr., manager

Boston branch; Frank A. Brastow, manager Philadelphia branch; Edward Stoughton, manager Buffalo branch. Also most of the directors, including Clarence M. Woolley of Chicago, E. A. Sumner of Detroit, Clarence Carpenter and W. S. Russel of Detroit, George W. Parker of St. Louis, Frank O. Lowden of Chicago, Frank M. Peters, general counsel of the company, and many of the dead man's business associates and friends from Boston, New York, Philadelphia and all the prominent business centers of the country. Cablegrams of regret from foreign branches in London, Hamburg and Paris were received. The remains were interred in the Forest Lawn Cemetery, Buffalo.

The honorary pallbearers at Chicago were Dr. William R. Harper, J. B. Murphy, O. S. Lyford, Dr. Thomas W. Goodspeed, Prof. Shailer Matthews, J. R. Chapman, Clarence Carpenter and William Hansbrough, and the honorary pallbearers at Buffalo were F. M. Peters, Ellis Webster, Hon. William A. Marcy, Dr. Dewitt G. Wilcox, Walter S. Russel, E. A. Sumner, Hon. John Fertig and Clarence Carpenter.

TRADE RESOLUTIONS ON DEATH OF MR. BOND.

At a special meeting of the manufacturers of boilers and radiators represented in Chicago, held August 9, 1902, the following preamble and resolutions were unanimously adopted:

Whereas, It has pleased the Almighty in His profound wisdom to remove from our midst our respected and greatly esteemed friend and business associate, Joseph Bond, president of the American Radiator Company; therefore be it

Resolved, That we express our heartfelt and profound regret at the loss in the prime of life of a gentleman so worthy of the highest honor in the commercial community, so truly beloved by his friends, tenderly attached to his family, and who for many years, by his strict probity and untiring energy, has contributed so largely to the growth and prosperity of our city.

Resolved, That we hereby extend our condolence to the officers and Board of Directors of the American Radiator Company in the loss of their faithful, worthy and beloved president; and be it further

Resolved, That we tender to the family and friends of the deceased our sincere sympathy, trusting that in their hour of trial they may be comforted by the presence and sustained by the hand of "Him Who doeth all things well."

Resolved, That an engrossed copy of this memorial be presented to the family of the deceased as a mark of our respect.

Keillogg-Mackay-Cameron Company.	Columbia Heating Company.
James B. Clow & Sons.	Novelty Iron Works.
International Heater Company.	Kewanee Boiler Company.
The Boynton Furnace Company.	Model Heating Company.
Holland Radiator Company.	Uniontown Acme Radiator Company.
J. L. Mott Iron Works.	Western Valve Company.
United States Heater Company.	Illinois Malleable Iron Company.

International Sanitary Congress.

The International Sanitary Congress, which was to have been held in Washington during the week of October 15, has been postponed until the week of December 2. The postponement was made upon the suggestion of Surgeon-General Wyman of the Marine Hospital Service, in order to allow the delegates to the conference to attend the meeting of the American Public Health Association, to be opened in New Orleans on December 8. The object of the convention is to encourage friendly co-operation between the health organizations of the several nations represented, in the matter of quarantine and sanitation.

The headquarters of the congress and all the meetings will be held at the New Willard Hotel. In addition to the treatment of sanitary quarantine laws there will be discussions in reference to special sanitary work now in progress and proposed, the sanitary improvement of harbors, soil drainage and the sanitation of dwellings.

A New Supply Plant.

The John Davis Company, manufacturers of steam fitters' and plumbers' supplies and dealers in wrought iron pipe, now at 51-79 Michigan street, Chicago, have in course of construction on what is known as the Dupont property at Union, Twenty-second and South Halsted streets, two new buildings which are to be ready for occupancy November 1. The buildings are to be a machine shop and warehouse, built of brick, the warehouse having four stories and basement and the machine shop being a one-story structure with gallery. The

warehouse is to be used solely for storage purposes, with the exception of a part of the second floor, where the business offices of the company are to be located. It is expected that the working force will number between 500 and 600 men, and that the capacity will be double that of the present time. Switch tracks connecting both buildings with the main line of the Chicago, Burlington & Quincy Railway permit of the best possible shipping facilities. The lighting and operating power is to be furnished by electricity, and electric elevators will be run in the warehouse. The erection in the near future of a foundry, storage houses and pipe sheds, in addition to the warehouse and machine shop, is contemplated, and it is estimated that the entire plant when completed will cost \$200,000.

RADIATORS.

It was no surprise to the trade that notices should be sent out announcing an advance in the price of radiation. The only surprise was that the advance did not come with the advance in the price of boilers on August 9 instead of being dated the 12th, or a few days later. The advance is 5 per cent., a like amount to the advance in boilers. That there was a strong feeling in favor of a greater advance and that the agreement was finally reached to cut in half the figure advocated by some is by this time an open secret throughout the trade. The new prices have been received with practically no adverse comment, as a larger advance was generally looked for.

The heavy buying of radiation in July indicated anticipation of the advance, and there is a feeling in the trade that the top has not yet been reached. In view of the prevailing cost conditions this feeling has substantial basis, and it will not be surprising if the buying in August should show further anticipation of a further upward movement in prices of both boilers and radiators. Notwithstanding this outlook the trade in some sections complain that the prices made for heating systems are too low and do not show the profits that are necessary when all of the expenses of carrying on a business are carefully considered. Complaint is also made that work costs more, owing to the fact that the workmen do less in a day than heretofore, so that, with shorter hours and increased wages, the heating contractor needs to revise the basis of his estimates for time, or loss will overtake him.

Although the rush season has not yet made its influence felt, the indications, as far as can be seen at present, favor a general stiffening of prices in the steam and hot water heating trade, both wholesale and retail.

Lawler's Steam, Water and Gas Specialties.

A 68-page publication, just received from the Lawler Water Feed & Damper Regulator Company, 181 Mercer street, New York, is devoted to a variety of devices of interest to the trade who install steam, water and gas systems. The catalogue opens with a variety of steam traps, including a return steam trap designed to return the water of condensation from heating systems to the steam boiler without the use of a pump. Temperature regulators, blow off catch basins and condensing tanks, various styles of automatic water feeders for boilers, hot water damper regulators and a thermostatic regulator for indirect radiation are then illustrated and described, and water heaters for heating the water in storage tanks for apartment houses and hotels, using either steam or gas, are also shown. Expansion tanks, cellar drainers and check drafts are another variety of devices adapted to the use of the plumber and steam fitter, which are included in the catalogue. A variety of high power gas burners are also shown, designed to secure a large heating capacity and capable of indefinite extension.

Another section of the catalogue is devoted to malleable iron fittings for the use of plumbers, including straddle fittings, cross ovens, air chambers, wash tray tees and elbows and boiler union tees. Another specialty is a return circuit check valve for domestic hot water supply systems. An adjustable boiler stand and a special plumb bob for gas fitting will be of interest to the trade. The catalogue is completed by several pages of useful tables and memoranda.

The International Acetylene Association.

ANNUAL MEETING.

The annual meeting of the International Acetylene Association was opened in the assembly room of the John Crerar Library, Chicago, on Monday morning, August 11, at 10 o'clock, with President George Landis Wilson in the chair. The meeting having been called to order the president read his annual address, as follows:

President's Address.

Since the successful meeting at Buffalo there has seemed to be very little that this association could do. There have been a number of new members added, and our old membership has kept up the moderate dues necessary to pay the working expenses of the association, so that we now have no debts and retain a small balance in the treasury.

The developments of the year in the acetylene industry have been marked in several directions. Most noticeable, in a general way, as influencing the business as a whole have been the extensive applications of acetylene to special uses. Car lighting has received particular attention, and much money has been invested in the development of this branch of this industry by a number of companies working independently upon many railroads to such good effect that acetylene to-day is recognized by the most progressive managers as the ideal light for railway coaches, although there is no unanimity of opinion as to the best means of applying it for this purpose. The several devices cover the entire field, commencing with compression of pure acetylene to the point of liquefaction.

Different experimenters have tested the merits of plain moderate compression; compression combined with various solvents; compression mixed with dilutents, independent sprinkler generators inside the car and also under the car; carbide feed generators inside, outside and through the car. Some have been very successful and some quite unsuccessful, but whatever the degree of technical success, all observers have agreed that the acetylene light meets every requirement, and among the traveling public it makes friends for acetylene to the benefit of all associated with the industry. Searchlights, headlights and stereopticons supplied with acetylene are no longer curiosities, but have become articles of regular merchandise.

Perhaps the most marked progress of the year has been in the installation of large plants for acetylene lighting in places which have until this year struggled under the handicap of irregular and ineffective illumination. In competition with acetylene the very small electric plant appears to be doomed, excepting in instances where some abnormal conditions make it practicable.

Marketing conditions have been slightly improved by the elimination of some of the smaller manufacturers who have not found in the business any large profits. Interests closely identified with the manufacture of carbide have taken up the sale of generators and supplies; the effect of this competition upon the industry as a whole is difficult to foretell, but I question whether it is advantageous.

One handicap under which all acetylene generator builders must labor for some time is the dearth of mechanics competent to install generators, instruct users and overhaul installations. This is a big country, and it is impossible for any one concern to have direct representatives everywhere. Neglect, carelessness, ignorance and indifference on the part of users are serious matters for any automatic apparatus to overcome. Clocks and watches have been articles of almost world wide use for several generations; dirt and maltreatment will cause them to stop; trifling attention from a man who "knows all" will put them right again. So it is in time with acetylene generators of any design, and I therefore recommend that this association compile and keep up a list of mechanics competent to attend to such work for generator owners, to which members of the association only should have access. Such mechanics need not be acetylene engineers; few clock tinkers are horological experts.

The insurance question will not down. This year has seen an attempt to burden the acetylene industry with more onerous and unwarranted regulations. Some of our members are of the opinion that the surest, simplest and most direct way to meet this difficulty is the organization of an insurance company who are entitled to confidence, composed of men who know that acetylene is the safest, as well as the best illuminant, ready to write acetylene risks on their merits at schedule rates, without penalties, unhampered by board rules. It is

also suggested that one or two Lloyds' might be organized for the same purpose. Such underwriters have ready at hand a large body of agents in direct touch with the insured, and should be able to do a successful and profitable business, because users of acetylene are, as a rule, among the most responsible and progressive people in any community. I recommend that at this meeting steps be taken for the inauguration of such plans.

This association should be more to its members than it has ever been in the past, and should command the active support of every fair minded man in the industry, as it has never undertaken to hamper or pledge any of its members, but has confined its efforts to the advancement of the business as a whole without fear or favor. Let us move forward with a determination to follow this road to the end, be it indistinct and rough, or broad and easy.

The address was closely followed by those present, and was liberally applauded at its conclusion.

The report of the secretary and treasurer was then presented by J. B. Carroll.

Secretary and Treasurer's Report.

While the past year has not been a particularly active one with the association, there has, nevertheless, been an increase in the membership, and the affairs of the association at the present time are in a healthy condition. The third annual bulletin issued by the association has attracted considerable attention, being read with interest by a large number of persons interested in acetylene.

The acetylene industry is without doubt still in its infancy, in spite of the recent rapid development, and the indications are that its future growth will be phenomenal; in fact, it is freely predicted by generator manufacturers that the trade this fall will far exceed that of any like period in the history of acetylene. I have had the pleasure of talking with generator, burner and fixture manufacturers in different sections of the United States, and find them universally optimistic regarding the future of acetylene.

I take pleasure in calling your attention to the greatly improved appearance of the official organ of this association, and believe that you will agree with me that its prosperous appearance is in itself conclusive evidence as to the present satisfactory condition of the acetylene industry.

I take pleasure in submitting the attached financial statement, which I trust will be satisfactory to you:

Cash on hand.....	\$173.07
Dues receivable.....	180.00

Total assets.....	\$353.07
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President Wilson announced the unavoidable absence of E. P. Caldwell, general manager of the Railroad Gas Lighting Company, Chicago, who had prepared a paper, entitled "Car Lighting from Independent Acetylene Generators," which was read by the secretary.

The discussion on this paper was postponed to a later session, and on motion the convention adjourned, to meet again at 2 o'clock.

MONDAY AFTERNOON.

When President Wilson called the convention to order it was evident that an interesting session was assured, as the attendance was largely increased, the room being comfortably filled. Members from distant points were present, and as the meeting progressed local members and others interested in the work of the association made their appearance.

President Wilson introduced A. E. Schlieder of Omaha, Neb., who read a paper, entitled "Acetylene Possibilities at the Louisiana Purchase Exposition," which is presented in another column.

Immediately following the reading of this paper the Committee on Transportation made their report, in which they outlined the work done during the year, which resulted in the following: Calcium carbide is now carried throughout the United States as third-class in less than car lots, and as fifth class in car lots. Generators, as a rule, are classed as double first, in less than car lots, and as fifth in car lots. A generator requiring a flat or gondola car takes the first class, with a minimum weight of 5000 pounds. The committee refer at length to the matter of shipping carbide in steam vessels carrying passengers, which, according to a decision of the Treasury Department made June 18, 1898, is prohibitory. The committee urged the necessity of action

upon the part of the association to remedy this matter, and suggested that a permanent committee be appointed to take this matter in hand during the coming year.

Following this report, Elias A. Long of Chicago read an interesting paper, entitled "Foreign Acetylene Associations and Their Work." Mr. Long had evidently given his paper much time and thought, as it gave evidence of careful preparation. A surprising feature of the paper was the statement that foreign associations devoted to the acetylene industry were numerically considerably stronger than associations in this country, one German association referred to having several hundred members.

W. W. Turner of Chicago read a paper, entitled "Town Lighting by Automatic Generators," which was listened to with much attention. The question of town lighting is one which is agitating the acetylene fraternity throughout the entire country, and any new points on the subject are eagerly sought after.

The Legal Committee presented their report, which showed that while there are hundreds of patents covering the manufacture of acetylene generators, yet during the past year no suits have been brought for infringement of these various patents. With acetylene burner patents a different condition exists. The infringement cases of Kirchberg Schwartz *et al.* vs. the American Acetylene Burner Company, and the American Acetylene Burner Company vs. Kirchberg, Schwartz *et al.*, have been prosecuted diligently during the year, and are so far advanced that both actions will be tried this year, and at the same sitting of the court.

The results of these cases is naturally awaited with much interest by the burner manufacturers, as well as the trade in general.

The president then appointed the following as Committee on Resolutions: L. J. Wing, New York; C. E. Ummach, Chicago, and R. B. Steward, Chattanooga. In appointing the Committee on Resolution President Wilson referred to the desirability of having on file with the secretary a full and complete list of expert mechanics making the repairing of acetylene apparatus a specialty, and urged the Committee on Resolutions to cover this feature in their recommendations.

The report on burners was presented by H. E. Shaffer of Buffalo, N. Y., and after being read was referred back to the committee, with the request that the report, in addition to covering the matter of burners, also take up the question of piping, as this was considered of as much importance in the operation of an acetylene plant as the burners. The report on burners was very fully discussed, and when the discussion closed the convention adjourned to meet Tuesday morning at 10 o'clock.

TUESDAY MORNING.

On opening the meeting C. E. Ummach, Chicago, Ill., was presented to the association, and read an interesting paper, entitled "Acetylene Wrinkles." The election of new members followed the reading of this paper. Those elected were as follows:

Chas. W. Iden, Iden & Co., New York City.
W. L. Barth, American Acetylene Lighting Company, Limited, Battle Creek, Mich.
W. K. Wellman, secretary National Stove & Illuminating Company, Cleveland, Ohio.
P. W. Shute, Ypsilanti, Mich.
Geo. F. Owen, Grand Rapids, Mich.
C. L. Williams, Chicago, Ill.

The president announced that the annual dinner would take place Tuesday evening at 6.30 o'clock.

Question Box.

The Question Box was then opened and placed in charge of Geo. F. Owen of Grand Rapids, Mich. This proved one of the interesting features of the meeting. The questions discussed were: "Purification and Its Real Value," "Meters and Their Use to Promote Business" and "Special Applications of Acetylene."

L. J. Wing of New York City then read a paper, entitled "Insurance As Related to the Acetylene Generator Manufacturer," which is presented elsewhere in this issue. A spirited discussion followed the reading of this paper, which finally resulted in the adoption of the following resolution:

Whereas, The policy of the insurance companies has hampered the acetylene industry; therefore, be it

Resolved, That the International Acetylene Association appoint a committee of three or more to consult upon the organization of a combination of insurance companies to insure acetylene risks, or, if necessary, to organize an Acetylene Insurance company or Lloyds, and the members of the International Acetylene Association pledges its support to the underwriters, which may be organized in accordance with this resolution.

This resolution was adopted with much *eclat*. At 4 p.m. the convention adjourned, to meet Wednesday morning at 10 o'clock.

Beefsteak Supper.

Over 30 members and others sat down to a well served supper at the Leland Hotel at 6.30 on Tuesday evening. After cigars and coffee had been served, a number of impromptu talks were made, and from the general tenor of the remarks it was very evident that a bright future is in store for the International Acetylene Association. The party broke up at 9 o'clock, well pleased with the evening's entertainment.

Following is a list of those present:

W. W. Turner, Abner Acetylene Company, Chicago.
Chas. E. Ummach, R. Williamson & Co., Chicago.
Edw. C. Lovett, Wm. H. Crane Company, New York.
George R. Wilson, Domestic Engineering, Chicago.
Paul J. Kruese, Sunlight Lava Mfg. Company, Chattanooga, Tenn.
F. P. Keeney, Domestic Engineering, Chicago.
H. H. Southworth, Plumbers' Trade Journal, Chicago.
Augustine Davis, Davis Acetylene Company, Elkhart, Ind.
C. T. Kuchler, Roessler & Hasslacher Chemical Company, New York.
P. W. Shute, Ypsilanti, Mich.
W. L. Barth, American Acetylene Lighting Company, Limited, Battle Creek, Mich.
W. K. Wellman, National Stove & Ilg. Company, Cleveland, Ohio.
W. C. Heimbeucher, Abner Acetylene Gas Company, Chicago.
H. H. Roberts, The Metal Worker, Chicago.
Chauncey L. Williams, Engineering Review, Chicago.
H. E. Schaffer, American Acetylene Burner Company, Hoosick Falls, N. Y.
A. E. Schlieder, Monarch Acetylene Gas Company, Omaha, Neb.
Frank Price, Davis Acetylene Company, Chicago.
Elias A. Long, Acetylene Journal Company, Chicago.
W. R. Burling, New York World, New York.
Geo. Landis Wilson, F. C. Wilson & Co., Chicago.
Geo. F. Owen, Grand Rapids, Mich.
J. B. Carroll, Chicago.

WEDNESDAY MORNING.

The convention was called to order promptly at 10 o'clock. President Wilson announced that the first order of business would be the election of officers. Judges and tellers were appointed and the following were duly elected:

President, George Landis Wilson of F. Cortez Wilson & Co., Chicago.

Vice-President, L. J. Wing of L. J. Wing & Co., New York.

Secretary and Treasurer, J. B. Carroll, Chicago.

The following directors were elected:

H. E. Schaffer of American Acetylene Burner Company, Hoosick Falls, N. Y.

O. E. Schlieder of Monarch Acetylene Generator Company, Omaha, Neb.

R. B. Steward of State Line Mfg. Company, Chattanooga, Tenn.

W. L. Barth of American Acetylene Gas Light Company, Battle Creek, Mich.

Committees.

The following committees were then appointed:

Trade Committee: L. J. Wing, New York; W. W. Turner, Chicago; Geo. F. Owen, Grand Rapids, Mich.; O. E. Schlieder, Omaha, Neb., and P. W. Shute, Battle Creek, Mich.

Committee on By-Laws: Chas. E. Ummach, Chicago; W. L. Barth, Battle Creek, Mich., and W. C. Heimbeucher, Chicago.

Committee on Display at Louisiana Purchase Exposition: W. C. Heimbeucher, Chicago; R. B. Steward, Chattanooga, Tenn., and Augustine Davis, Elkhart, Ind.

Resolutions of thanks to the John Crerar Library for the use of the Assembly Hall for the meetings were duly passed, and also a vote of thanks to the trade press, after which the convention adjourned. The place of next meeting will be selected by the Executive Committee.

The Allen Automatic Air Valve.

In the accompanying illustrations sectional views are presented of the Allen automatic air valve, made by the Norwall Mfg. Company, 42 Dearborn street, Chicago. This valve is made entirely of metal, without expansion post, ring or spring. A simple shell with the radiator connection is so placed as to form a well in the lower part of the valve, to receive and retain the water condensed from the steam as it passes into or through the valve. A sealed metal float is placed in this well.

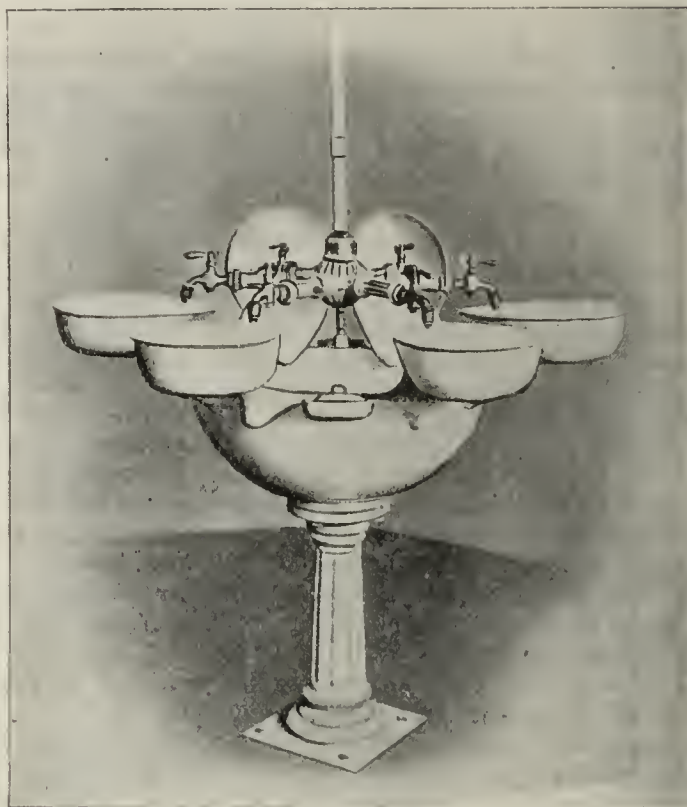
Surrounding the inner well or chamber is an outer chamber, which is connected with the inner chamber by means of a small hole near the bottom of the inner shell. During the first operation the air in the chamber passes freely through the valve, which is open, as shown in Fig. 1. When steam enters the valve it condenses, gradually filling the inner well with water, carrying the sealed metal float to its seat, thus closing the valve, as shown in Fig. 2. When steam enters the valve in the first operation it takes a few minutes to condense sufficient water to close the valve. During the first operation the air in the outer chamber is expanded by the heat of the steam, and a portion of it is expelled through the small hole into the inner chamber, thence out of the valve through the regular outlet. As the inner chamber fills with water from condensation the outlet from the outer chamber becomes sealed by the water. As the valve cools when steam goes off the air in the outer chamber contracts and draws the water from the inner chamber, allowing the float to drop, thus opening the valve. When steam again enters the valve the heat almost instantly expands the air in the outer chamber, forcing the water into the inner chamber, carrying the float to its seat and closing the valve.

The operation is always the same, whether the pressure is 1 pound or 10 pounds. The greater the pressure

of shape. The expansive force is simply air. The valve freely vents the air from the radiator, closing rapidly against steam and water automatically.

A Workshop Washstand Design.

We reproduce from *Cassier's Magazine* the illustration of a workshop washstand design which is on exhibition in the Museum of Security, Amsterdam, Hol-



A Workshop Washstand Design.

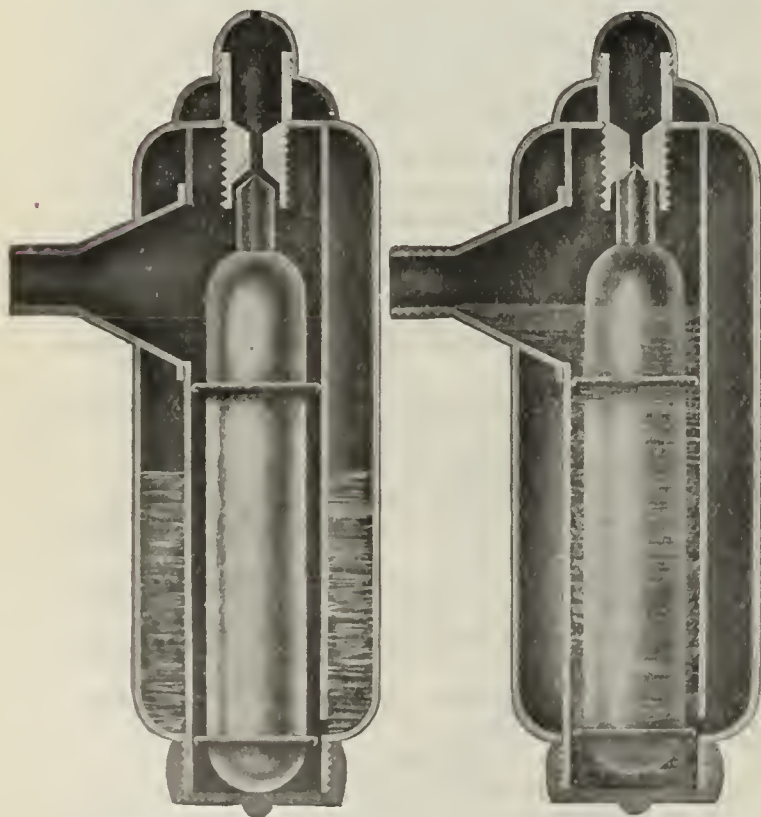


Fig. 1.—Valve Open.

Fig. 2.—Valve Closed.

The Allen Automatic Air Valve.

the higher the temperature, but the only effect this condition has on the valve is simply to expel a little more of the air from the outer chamber of the valve. When the valve cools, as there can be only a given amount of water in the inner chamber, up the level of the outlet into the radiator, the contraction of the air in the outer chamber draws the water from the inner chamber and then draws air through the water until the chamber is fully recharged. When cold the condition of the valve is always the same. No adjustment is necessary at any time, as there is no expansion post to buckle or get out

land. This society, and the French and Italian associations of employers for the prevention of accidents, exhibit many devices designed to avoid danger and prevent suffering. The washstand shown is evidence of the opinion that sanitary precaution is beneficial, as an individual tap and bowl reduces the danger of contamination which may result from a number of persons washing in one large tub or trough. With the tilting bowls, cleanliness may be secured by each person who uses the washstand. The general design is adapted to a cement floor, to drain readily and to facilitate scrubbing. It occupies little space, and affords each user ample room for ablution.

The Tobey Water Heater.

The frequency with which the demand to supply an immense quantity of hot water is made upon the heating contractor, will secure attention for the little pamphlet issued by the J. L. Mott Iron Works, 84-90 Beekman street, New York City, describing the Tobey automatic water heaters and the steam traps used in connection with them. These heaters consist of an outer shell of different diameters and lengths, according to the capacity, in which there are a number of copper heating pipes. These pipes are so arranged that a flow of steam enters them and heats the water which surrounds them. The condensation from the tubes passes off through the Tobey trap, which is especially designed for the purpose. A cylinder of the same length, but of smaller diameter, is supported immediately above the water heater, and the hot water passes off through it. This upper cylinder contains a perforated copper tube attached to a thermostatic valve, so that as soon as the water has reached a certain desired temperature to which the heater has been adjusted, the steam is shut off, operating automatically, opening and closing as necessity requires. This device has been found useful for supplying apartment houses, hospitals and infirmaries, where a large quantity of water for bathing or

other purposes is required at a given temperature, furnished by an apparatus which prevents any possibility of overheating and scalding. It is made in capacities for heating from 1000 to 10,000 gallons per hour, and has been used in a number of instances for heating the water for plunge baths and swimming pools in gymnasiums and similar buildings. The concern issue a special pamphlet devoted to these devices, giving full information and particulars in reference to them, from which the heating contractor can readily determine the size of apparatus that he may need for a given piece of work.

ACETYLENE POSSIBILITIES AT THE LOUISIANA PURCHASE EXPOSITION.*

BY A. E. SCHLIEDER, OMAHA.

About 100 years ago, President Jefferson purchased from the French nation for the people of the United States an immense tract of land now comprising several States of the Union; to commemorate this transaction it has been decided to hold a grand exposition at St. Louis, Mo., in 1904. It is intended that this coming exposition shall eclipse all former efforts in this line, especially it is proposed to make the illumination of the grounds and building the grandest spectacle ever witnessed by human eyes, and no doubt it will well repay any sacrifice necessary to go to the exposition, if only to see the illumination, which we are promised shall be one of its many interesting features.

The acetylene possibilities at this coming exposition are largely dependent upon the amount of practical interest taken and the assistance rendered by the management of the exposition itself, as well as upon the amount of money, energy and intelligently directed effort put into the enterprise by acetylene interests.

ACETYLENE AT THE PAN-AMERICAN.

The magnificent stately building, beautifully, brilliantly, yea, perfectly illuminated with acetylene, in which were displayed practical, comprehensive exhibits of the acetylene industry at the Pan-American Exposition at Buffalo last year, will long remain a bright spot in the memory of all who saw it (excepting possibly our competitors), as well as a lasting monument to the energy and ability of those who conceived and carried to a successful termination that magnificent enterprise, which was truly a revelation to thousands, including not a few who were already somewhat familiar with the illuminating value of acetylene.

The Acetylene Building, the carbide producing furnace, the generating apparatus, the burner and portable lamp displays, were all excellent and creditable for 1901, but the possibilities for 1904 are greater than they were in 1901, and we must surpass the Buffalo acetylene exhibit, or it would seem as if we were not progressing; and here the question arises, How shall this be done?

Among the many suggestions which present themselves are a larger, more imposing acetylene building, with the lights outside and inside multiplied, with more space for individual exhibits. It should be possible to secure enough exhibits to occupy every available foot of space in this building with displays from the different lines in the acetylene industry, not a foot of space should be allowed to remain vacant; a well filled building always creates a more favorable impression than one with vacant spaces, especially when the exhibits are all of the same nature. To secure this result it might be possible to make the price charged for space nominal, as making an exhibit at a large exposition is expensive at the best, and many manufacturers argue that the benefits derived do not justify the outlay necessary to make a creditable exhibit. Exhibits are most interesting and instructive when they are installed as live exhibits—that is, they can be set up so that they can be operated, thus demonstrating in a practical way what may be expected from them when installed on the user's premises.

WORKING EXHIBITS.

Generating apparatus especially should be installed, so that the process of producing acetylene may be illustrated while the theory is being explained. Many persons are slow to grasp the idea from mere explanation, and it has happened that after the operation of a generator and the philosophy of producing acetylene has been minutely explained one of the careful listeners has asked: "Where did you say you put the gas?"

Comprehensive exhibits of portable house lamps, bicycle lamps, buggy lamps, miners' lamps and railroad lanterns, should be made, as all these help to educate

the public to the intrinsic value of acetylene. In my home city the gas company use acetylene lamps to read their meters by, thus even our competitors use acetylene in dark places, where they think no one is looking at them. Railroad companies are constantly experimenting to find suitable apparatus for engine head-lights and coach lighting; a satisfactory exhibit along this line would attract no small amount of interest from railroad men; here is a large field for acetylene endeavor practically untouched.

ACETYLENE COOKING APPARATUS.

Acetylene stove exhibits should demonstrate that acetylene is practical for fuel purposes; many gasoline plants are sold to people who would buy acetylene plants were they not positively informed by the gasoline man that their acetylene range will surely go wrong, explode, demolish everything in sight and retire the cook from future usefulness; surely a dreadful calamity. Our friends, the acetylene range manufacturers, might enter into a partnership with some promoter of a new brand of flour, or a new cereal which they are anxious to demonstrate; and prepare the samples on an acetylene stove; distribute it to the public with a souvenir stating that the bun was baked by acetylene heat. This would have the merit of being popular, as few people will refuse samples of anything that is good to eat.

ACETYLENE LIGHT VS. ELECTRIC LIGHT.

One of the hard things in demonstrating acetylene is to convince the average man that a ½-foot acetylene burner gives as much light as his 16 candle power electric incandescent lamp, and when you tell him that it gives one-third more light than his electric lamp he is apt to intimate that you are taking liberties with his intelligence. It would be possible to arrange an exhibit of acetylene and electric incandescent lights in an otherwise dark room in such a way that the two would light and extinguish alternately each five seconds; arrange the two so that the cost per hour would be the same for one as for the other, in this way we might convince our skeptical friends of the truth of our assertions and of the superiority of acetylene, because there would be a fully developed eclipse in that room every alternative five seconds.

There will be many difficulties on the grounds away from the acetylene building. All the entrances to the grounds might be lighted with acetylene; these lights ought to be fitted with electric spark igniters and arranged so they will spell out the word acetylene, thus appraising every one entering the grounds that acetylene is staring them in the face and is not ashamed of it, either.

Another possibility is an acetylene tower (perhaps not so elaborate as the Pan-American electric tower); this might be located in a prominent place on the grounds and fitted with a large number of acetylene lights, this would show by contrast the difference in color and power of acetylene and electric light. It would also create a favorable impression on occasions when the power plant goes wrong and the electric lights go out of business, leaving the grounds and visitors in darkness.

An ordinary eight or ten room dwelling might be provided in which to entertain our friends; this should be neatly and comfortably furnished and liberally provided with papers and magazines. It should be lighted with acetylene and provided with an acetylene range, so a complete outfit could be shown; this would assist greatly in creating a demand for acetylene in private homes.

THE COLOR EFFECT ON PAINTINGS AT NIGHT.

The Fine Arts Building ought to be illuminated with acetylene, as this light is especially adapted to reveal the "beautiful;" it ought to be employed where the desire is to bring out the skillfully drawn lines, the delicate shades and harmoniously blended colors.

One of the popular ways to demonstrate acetylene is to light up State buildings; would it not be possible to get the privilege to light up a group of such buildings located reasonably close together? The gas could be supplied from a central plant; the surroundings of these buildings might be lighted with acetylene street lamps installed on lamp posts or swung from wirelike electric arc lamps. An exhibit like this would fully illustrate acetylene municipal lighting, a subject which is being earnestly discussed by many of the smaller towns. Here is a practical field which has not been worked very hard as yet.

These are respectfully submitted as a few of the acetylene possibilities at the Louisiana Purchase Exposition; because of the hurry necessary in preparing this paper it is quite likely that the best and most important ones were entirely overlooked and omitted, for there is practically no limit to the possibilities of acetylene in the lighting field, and we predict that this new agency

* Paper read at meeting of International Acetylene Association, Chicago, August 11-13, 1902.

of light will march onward and mount upward (using its competitors as stepping stones), until it stands at the very head and is universally acknowledged the queen of lights, worthy of the world's profoundest respect.

ACETYLENE WRINKLES.*

BY C. E. UMMACH, CHICAGO.

This subject is one that has given the writer of this article more than several deep wrinkles. Scorn has its effect in producing wrinkles, also good nature, and a man with sufficient laughing stock will be and is troubled with wrinkles; mechanics find it necessary to put wrinkles, or, in other words, corrugate metal in order to strengthen such material, and I am no doubt delegated by our worthy president to bring out some wrinkles that will strengthen the working of our association. New ideas are simply formed by an individual thought and seldom can one convince a body of men to agree on any particular subject and invariably each and every one had no trouble in adding suggestions until the idea has grown so large it becomes uncontrollable, and the result is each one continues in the same old rut. My recommendation to the association creates a permanent wrinkle department, and let each member send such information to such department that will be of interest to the trade and at our next convention we will be fully advised of all the good things, and possibly some bad ones, at which time we can more fully appreciate the value of the wrinkle department. As you no doubt are all aware of the fact that I am interested in a supply business, and endeavor to issue catalogues illustrating such goods as the trade requires to complete acetylene installation, and I will be pleased to furnish the wrinkle department with such information as my firm may receive from time to time that will no doubt be very beneficial to all concerned.

A wrinkle department is of great value and no one man can more than edit such wrinkles as are sent in from time to time by the members during the year. I earnestly believe that this new departure in the association will be looked upon with great interest, as other associations that have been in existence for years make it a point to spend several days during their convention time discussing wrinkles, and I for one will co-operate to the fullest extent to make the wrinkle department a valuable bureau of information.

New York City Notes.

The number of men now out of work does not speak well for the present state of the trade. Business in the Bronx is especially dull, the only work there being houses which do not come under the tenement house law. A similar condition prevails in Queens and Brooklyn. All the boroughs show a large amount of work being done in private houses, Brooklyn and Queens being especially noticeable in this respect.

In spite of the number of men out of employment it is hard to get enough men to work on the large buildings using heavy screw pipe. The average Harlem plumber doesn't seem to want to have anything to do with it.

Maj. W. H. Linson of the Seventy-first Regiment is just finishing the ten-story Hotel Portland, at 127 and 129 West Forty-sixth street; W. H. Spelman & Co. are plumbing the Graves Hotel, at Madison avenue and Twenty-ninth street; James Armstrong is well along with work in the new woman's hotel—the Martha Washington—on Twenty-ninth and Thirtieth streets, between Fourth and Madison avenues, and John A. Smith has the work in a large nine-story apartment house running from Nineteenth to Twentieth streets, near Third avenue.

The Greater New York Association Executive Committee held its regular meeting last Tuesday afternoon at Rockaway Beach, in connection with the Queens Branch. It was one of the largest attended meetings of the season. After adjournment the representatives, numbering about 50, took dinner at the New York Hotel and spent the evening on the beach. Some missed the last train and accepted the hospitality of the Delcassian,

* Paper read before the International Acetylene Association, Chicago, August 11-13, 1902.

Jefferson and some of the other boat clubs to which members belonged.

Among the large buildings now under way are the Stanley, a ten-story apartment house, at 124 and 126 West Forty-seventh street, the work on which is being done by Stroh & Huber, and the Somerset, a 12-story apartment, at 148 and 150 of the same street, where the work is being done by Charles Heusle.

ENAMELED IRON BATHTUBS.

The independent manufacturers of enameled iron bathtubs have for some time been at work upon a plan by which the concerns outside of the leading manufacturers could agree on some method of improving the conditions which have been prevalent up to the present time in this line of business. It seems that the smaller manufacturers of enameled ware have been putting their goods upon the market at prices which were at no time based upon the cost of manufacture. The chief object simply was to market the output of their plants in order to keep themselves clear of an accumulation of goods which were in a more or less state of improvement and development in the manufacture. The leading manufacturers have had no trouble whatever in disposing of their output, as they make the best ware to be had, and have established reputations which stand for good goods and the best there is to be had in the enameled goods line. The independent manufacturers have had to fight this competition and also to establish themselves as reputable makers of good goods, and in order to get their ware upon the market have been compelled to make the prices considerably below those obtaining for the goods made by the larger concerns. It is to remedy these conditions that the enameled ware manufacturers are now getting together. It is reported that a meeting will be called at Pittsburgh, Pa., the latter part of this month, at which it is said that every one of the manufacturers will be in attendance.

This is not the first time that efforts have been made to get the manufacturers of enameled ware together. Prior to the consolidation of the various interests which now constitute the leading manufacturing concerns in this business, such an association was, for several years in existence, with the result that prices then ruling for enameled ware were almost double what they now are for similar goods. There is reason to believe that the proposed organization will meet with success, as very few, if any, of the independent manufacturers have made any profits. They have, in several instances, got a good insight into the business, and it is no longer a mystery to the trade. There is no reason why, if the business is conducted on legitimate lines, it cannot be made profitable to the smaller, as well as the larger manufacturer.

Heating and Plumbing Notes.

THE Mayor of Niagara Falls, N. Y., has ordered an inventory of the buildings in that city that are supplied with water from the street mains, with the object of inflicting a fine of \$25 on all plumbers who have made connections with the street mains without reporting the work to the proper authorities. It is understood that a large quantity of water is being furnished to householders, from which the city derives no revenue.

In the article entitled "The Vacuum System of Heating," printed in *The Metal Worker* of August 9, an error was made in the name of the automatic air valve mentioned. It should have been called the Allen automatic air valve, which device, made by the Norwall Mfg. Company, 42 Dearborn street, Chicago, is illustrated in this issue.

THE Board of Public Works of Jackson, Mich., has ordered suits against the plumbers who persist in ignoring the water ordinance provisions by doing work without having filed bonds, and in turning on water for consumers without permits.

THE L. J. MUELLER FURNACE COMPANY of Milwaukee, Wis., have secured the contract for installing new ventilating and lighting apparatus in the State Capitol, the amount of the contract approximating \$60,000.

THE Board of Public Works of Chattanooga, Tenn., have awarded the contract for heating the First District School Building to T. S. Wilcox, who bid \$3923. Mr. Wilcox will use the Gurney Boilers.

THE HEATING & VENTILATING FOUNDRY COMPANY of Pittsburgh, Pa., have secured a free site near Elm Grove, Wheeling, W. Va., where they intend to erect a large manufacturing plant. The concern will have a capital of \$100,000, \$50,000 of which is to be subscribed by citizens of Wheeling.

A FIRE doing damage to the extent of \$2500 visited the Plumbing Supply warehouse of Hull, Camp & Co. at 81 Centre street, New York, last week. The fire started on the first floor, which was occupied by Thomas Ford & Co. The loss is said to have been covered by insurance.

THE VAN BERGEN COMPANY are installing a new Steam Heater in the Miners' and Mechanics' Bank at Carbondale, Pa.

THE CARLTON HARDWARE COMPANY of Calumet, Mich., have a contract for installing a heating system in the Sacred Heart School in that city.

W. H. HALSEY of Milwaukee, Wis., has prepared a special report for the State Board of Control, stating that the prevailing diphtheria and kindred diseases at the Industrial School at Waukesha is probably due to defects in the plumbing and drainage system of the institution.

THE *Chronicle* of St. Louis, Mo., states that, notwithstanding the journeymen plumbers of the city had their wages advanced from \$3.50 to \$4 per day last spring, they are now intending to demand a further advance of \$1 per day.

J. WILLS of Revere, Mass., is about to move his plumbing business to a new store near the Central Fire Station.

C. C. MERRILL, son of John Calvin Merrill, the pioneer Sewer Pipe manufacturer of the western part of the United States, died in the City of Mexico on July 26. Mr. Merrill was born in Akron, Ohio, in 1849, and about six years ago, in connection with Harry Neal, secured a concession for the Mexican Clay Mfg. Company, of which he was the vice-president at the time of his death. He is survived by his wife and one daughter.

SCHREIBER & REINHARD of Lebanon, Pa., have the contract for installing the steam heating system in the Zion Lutheran Church in that town.

WILLIAM FINEGAN of Sharon Hill, Pa., has moved into a new plumbing shop.

BIDS will be received until September 6 by the Board of Regents of the University of Texas, at Austin, Texas, for the steam heating system in a four-story brick dormitory for girls.

WE have received from Thomas Kelly & Brothers, Congress street and Forty-sixth avenue, Chicago, Ill., a copy of their 1902 catalogue devoted to the Kelly Non-Freezing Goods, including Stop and Waste Cocks, Self Closing Anti-Freezing Hopper Cocks, Water Cushions, the Kelly Siphon Jet Wash Basins, Frost Proof and Automatic Water Closets and Flush Tanks and Rubber Connections for shower bath use.

THOSE who intend lighting factory buildings by means of Gas Arc Lamps will be interested in a little catalogue issued by the Federal Mfg. Company, 162 West Long street, Columbus, Ohio, devoted to their Gas Arc Lamps. It shows several styles of Lamps adapted for both indoor and outdoor use. They are said to be well adapted for lighting churches, halls and large buildings where a light of strong illuminating power is required.

THE WALKER & PRATT MFG. COMPANY, Boston, Mass., are sending out a mailing card suitable for hanging up in a conspicuous place, showing the various types of the Crawford and Walker Boilers. The Walker Boilers are of the vertical sectional return flue type, while the

Crawford Boilers are round in form. The two lines provide apparatus adapted to all the requirements of the heating trade.

WILLIAM HAAS, 57 Grand street, New York, is sending out a circular showing his Improved Pipe Cutter, and giving testimonial letters from a number of contractors who have used the tool with satisfactory results.

THE Supervising Architect, Washington, D. C., will receive bids until September 11 for the heating apparatus for the Post Office at New Brunswick, N. J.

THE COFFIN VALVE COMPANY of Boston, Mass., have been given the contract for 45 Iron Gates, in connection with the Beckley sewer beds.

THE JUDSON A. GOODRICH COMPANY, 105 Beekman street, New York, have been appointed Eastern representatives of the James A. Trane Vacuum Heating Company and the Norwall Mfg. Company of 40 Dearborn street, Chicago. They are prepared to furnish information and the apparatus needed for equipping ordinary low pressure heating systems with the Trane Mercury Seal and the Allen Automatic Air Valve, to enable them to be used as vacuum systems.

CLARENCE V. KELLOGG of the Kellogg-Mackay-Cameron Company, Chicago, Ill., has left all the details of the Boiler and Heating Supply trade behind him to enjoy a few weeks much needed rest at Mt. Clemens, Mich.

THE Supervising Architect, Washington, D. C., will receive bids until September 16 for heating the Post Office at Oakland, Cal.

H. GILBERT HART of the Hart & Crouse Company, Utica, N. Y., was one of the members of the heating trade who attended the funeral services, at Buffalo, N. Y., of Joseph Bond, the late president of the American Radiator Company. Mr. Hart held a high opinion of the business sagacity of Mr. Bond, the tribute of one successful business man to another.

THE CRESCENT BOILER COMPANY, who have just put their sign on the window at 68 Beekman street, New York, are offering the Crescent Steam and Hot Water Heaters to the trade. Steamfitters visiting New York are invited to call and examine the Crescent Boiler.

THE Supervising Architect, Washington, D. C., will receive bids until September 9 for heating and ventilating apparatus for the Post Office and Court House at Elmira, N. Y.

A MEETING of the New York State Association of Master Plumbers, held at the Livingston Hotel, Rochester, N. Y., on August 1, was attended by President Chas. B. Huck of Buffalo, Vice-President B. F. Donohoe, Secretary H. J. Wood of Buffalo, Treasurer A. H. Brown of New York City, Horace F. Westcott and John E. Dugan of Albany, Samuel Morris of Troy, R. H. Walker of Elmira, J. J. O'Donnell of Syracuse, C. A. Campbell of Watertown and William G. Reid of Rochester. The meeting was held for the transaction of the regular business of the association and for the purpose of securing a more strict adherence to the provisions of the Cleveland Resolutions.

THE BOYNTON FURNACE COMPANY, 207 Water street, New York, and 147 Lake street, Chicago, are sending out a 42-page pamphlet, bound in a red cover with a design in color and gold, devoted to the Boynton Steam and Hot Water Heaters. The catalogue shows, by means of transparent, partly assembled and broken views, round and vertical sectional Steam and Hot Water Heaters and Tank Heaters adapted for all classes of buildings, the largest size having a grate 42 inches wide, specially adapted for large work.

THE plumbing trade will be interested in the facilities of E. S. Wheeler & Co. for shipping promptly all kinds of Plumbing Supplies from their plant at New Haven, Conn. In New York, at 12 and 14 Cliff street, they make a fine display. At the present time they are making a drive for the trade on Closet Tanks, both high and low down, well made and well equipped.

KRAUS, KIRN & Co., Akron, Ohio, bid \$3000 and secured the contract for plumbing and heating the new building of the United Charity Association. Their competitors for the work, Engelhart & Eckart, made a donation of \$50 to the building fund.

THE STANDARD STEAM ENGINEERING COMPANY of Lancaster, Pa., have secured contracts for heating the Clay Street School Building.

THE EXETER MACHINE WORKS have been awarded a contract for installing the heating plant at the Hoyt and Alumni Halls, at the Academy, Manchester, N. H.

BIDS will be received until August 20 by John P. McMahon, Clerk of West Hoboken, N. J., for a steam heating system for the Friendship hose fire house.

THE Master Plumbers' Association of Jersey City, N. J., held a meeting on August 7 at Groeschel's Hall, Oakland and Beacon avenues, and completed arrangements for a trolley outing to Wagner's Park in Carlstadt on Saturday, August 23. It will be a family affair. Three chartered cars will leave Exchange place at 2 o'clock in the afternoon for the park, where there will be dancing, prize bowling and athletic games until 6.30 p.m., when dinner will be served.

As we go to press a meeting of the Eastern Trade Golf Association is in session at the Arena, 39 West Thirty-first street, New York, in response to a call of the president, Charles H. Simmons, issued by Secretary H. A. Smith from his office, 1123 Broadway.

A LETTER from Brown & Wales, 69-83 Purchase street, Boston, Mass., informs us that they have just issued a new catalogue of Plumbing Goods which contains some Closet Combinations that will be of interest to the trade. The company have recently enlarged their office and provided better facilities in their salesrooms, including a showroom for their Plumbing Goods, which are nicely displayed. They are now prepared to handle trade in Plumbing and Heating Supplies promptly and invite visits and correspondence.

THE ACETYLENE APPARATUS MFG. COMPANY, 157 Michigan avenue, Chicago, Ill., are sending out a four-page circular printed in two colors calling attention to their facilities for making Acetylene Lighting Apparatus adapted for any purpose, from the portable light for contractors working out-of-doors to the residence apparatus and plants for lighting hotels and grounds and towns. The company employ expert engineers, who are at the service of their customers, and invite investigation of their goods.

THE ABNER ACETYLENE GAS COMPANY, 41 La Salle street, Chicago, are prepared to furnish the most complete literature to those who are interested in the Abner Acetylene Generators for residence lighting, large building lighting, mutual plant lighting and town lighting.

CONTRACTORS who have to work at night in new, unlighted buildings or out of doors will do well to look into the facility with which a bright white light of great illuminating power can be had under any conditions by the use of the Pathfinder Portable Acetylene Apparatus made by Henry Giessel & Co., 215 and 217 Lake street, Chicago.

S. R. BENNETT, Dover, N. J., has the contract for the steam heating and plumbing work at the Mansion House, Dover, which is being remodeled. He will put in a No. 828 Henderson Thermo Steam Heater made by the Prizer-Painter Stove & Heater Company, Reading, Pa., and 26 additional Radiators, and rearrange the old heating system.

J. C. LIBBY, St. Augustine, Fla., has just finished the plumbing and gas fitting in the residence of R. Canfield, and has contracted for plumbing the new house of N. W. Cooley.

THE contract for installing a heating system in the Court House at Lawrence, Mass., was awarded to W. F. Rutter of that city, who bid \$7000, in preference to Hury Bros. of Salem, who bid \$3 lower, the contract being given to the home concern. The plumbing contract was awarded to William Forbes & Co.

THE ALDEN SHEET METAL WORKING & PLUMBING COMPANY are installing the Boynton heating system in

the Kingman School at Brockton, Mass. This system was designed by James A. Harding, the New England representative of the Boynton Furnace Company of New York City.

THE AMERICAN HEATING COMPANY bid \$1080 and secured the contract for installing the heating apparatus in the Peter Cooper School, at Duluth, Minn.

HARRY SMILLIE & Co. of Rhinebeck, N. Y., have a contract for plumbing the High School Building in that town, and will use fixtures made by the J. L. Mott Iron Works of New York City.

THE BUFFALO FORGE COMPANY, Buffalo, N. Y., are using a mailing card to call attention to their Mechanical Draft Apparatus for obviating the necessity of a high chimney. The picture shows a battery of boilers connected with a high chimney which is depositing soot indiscriminately through the atmosphere. The second picture shows a similar battery of boilers, equipped with the company's Mechanical Draft Apparatus, from which no soot is arising. It is claimed that with a mechanical draft system low grades of fuel can be burned and the velocity of the fan will govern the boiler pressure automatically. The statement is also made that the first cost of the Apparatus is favorable, and that daily use will demonstrate its economy.

THE WATER HEATER MFG. COMPANY, 211 Fifth street, Milwaukee, Wis., are sending out circulars showing their Economy Steam Radiator designed to be operated by a gas burner consuming about 12½ feet of gas per hour. The steam generated from the little boiler is distributed through a series of tubes increasing the heating surface and the efficiency.

JOHN J. KEOMANE of Philadelphia has a contract of \$1750 for installing a steam heating system in St. Malachy's Roman Catholic Church in that city.

THE GRIFFITH HEATING & PLUMBING COMPANY of Spokane, Wash., are building a new warehouse on Jefferson street, adjoining the railroad, which will be a brick construction, and afford them a floor space of 10,000 square feet. The warehouse will be of strong construction, and will be used for carrying a stock of House Heating Boilers. The company have recently issued a 500-page catalogue devoted to Steam and Plumbing Supplies.

WILLIAM A. HECKMAN, 16 North Eighth street, Reading, Pa., is installing a hot water heating system in the Sisters' Home adjoining St. Paul's Roman Catholic Church, using one of the Prizer-Painter Stove & Heater Company's Boilers with 24 Radiators. He is also installing two of the same style of Boilers in the residence of Mrs. Samuel Geissler, and has, in addition, a number of other heating contracts.

FISCHER & WURTH, Jersey City, N. J., are making a special Galvanized Sheet Iron Cover for Wash Trays that is gaining some popularity in the metropolitan district.

New Firms and Changes.

THE NATIONAL LIGHT, HEAT & POWER COMPANY have been incorporated at St. Louis, Mo., with a capital of \$1,500,000. The stockholders are all said to be prominent business men of St. Louis. The company have been organized for the purpose of owning, controlling and exploiting all fundamental principles of the application of oil as fuel in burners for domestic use and for use under boilers for whatever purpose.

THE MCQUATTERS PLUMBING & MACHINE COMPANY of Hillsboro, Texas, have been organized, with a capital of \$12,000, by A. L. Lowry, A. J. McQuatters and W. R. Lang.

THE SANITARY PLUMBING COMPANY of Chicago have been incorporated, with a capital of \$2500, by Joseph Weshenbach, A. P. Tewksbury and A. J. Shaw, to manufacture Plumbers' Supplies.

JOSEPH MULLINS AND SAMUEL MILLER have recently formed a partnership and are carrying on a plumbing, tinning, gas fitting and heating business at 935 East Main street, Bridgeport, Conn., under the firm name of Joseph Mullins & Co.

The Muskingum Valley Steel Company.

The Muskingum Valley Steel Company of Zanesville, Ohio, have just completed some important additions and improvements to their plant. The main building has been extended 66 feet in length, and there have been installed in the addition a new 26 x 40 inch hot mill, with a combination sheet and pair furnace in connection; also a new double annealing furnace, a new billet heating furnace and an additional stand of cold rolls. By the addition of this equipment the company's output of black sheets will be increased about 25 per cent. and the production of sheet bars from billets 100 per cent., giving an increased production of about 750 tons of sheet bars and 250 tons of black sheets monthly. Besides these improvements the company are about to install a galvanizing department with a capacity of 25 tons a day. The whole of the company's plant has recently been overhauled and put in first-class shape. They are now turning out standard sizes and gauges of black sheets, corrugated, V crimp, roll and pressed standing seam roofing, brick siding, &c. Upon the installation of their picking and galvanizing departments they will be able to produce the finer grades of sheets, including pickled and cold rolled and polished sheets. Goff, Horner & Co., Limited, Frick Building, Pittsburgh, are the exclusive sales agents of the concern.

The Youngstown Iron Sheet & Tube Company.

The annual meeting of the stockholders of the Youngstown Iron Sheet & Tube Company of Youngstown, Ohio, was held last week at the company's offices in that city. The old Board of Directors were re-elected, with one additional member, as follows: Myron C. Wick, Robert Bentley, C. D. Hine, H. M. Garlick, William Wilkoff, James A. Campbell, H. H. Stambaugh, George L. Fordyce, all of that city, and Harry Dalton, J. L. Severance and James Parmelee, Cleveland. The directors decided not to elect a new president in the place of Col. George D. Wick, who retired from the office on his departure for Europe, but to allow the place to remain open until a later meeting. The officers elected were James A. Campbell, vice-president and general manager; W. H. Foster, secretary, and Richard Garlick, treasurer. An executive board was also chosen, consisting of Robert Bentley, H. H. Stambaugh, James A. Campbell, Richard Garlick and George E. Day, the latter being the new sales agent of the company, who recently came to Youngstown from Chicago, where he has had an extensive experience in the iron and steel business.

A New Solder.

The E. M. Lang Company, Portland, Maine, the well-known solder manufacturers, have recently introduced and are manufacturing a new product which they term Lang's Best Yet Never Slip cable wire solder. This solder is principally intended for use on capping machines and also with side seamers for making cans, or in any machine of the kind where the feed is automatic. The manufacturers state that heretofore wire solder has mainly been produced by hydraulic pressure, which is a very expensive process. The solder being forced through a small hole, or die, at great pressure the surface becomes glazed, and therefore requires a greater heat to melt it than does the new solder which the company are now manufacturing. Their process consists of casting the wire solder upon the surface of a rotating wheel from fluid metal. They claim that the solder made by this process will melt at from 10 to 30 degrees less temperature than other solder of the same mixture produced in the old way, and that a more even mixture can be produced than by any other existing process. Solder made by hydraulic pressure is not only expensive to manufacture, but, it is stated, that in the process of manufacture the tin and lead are apt to separate.

Samples of the new solder, with which the makers have furnished us, show that it presents a cable or knurled surface without the glaze which has been a dis-

advantage in other solders made by hydraulic pressure. The company have applied for a patent on their process. They state that the samples of their new solder which they have sent out to the trade have proved highly satisfactory to the users, leading to a volume of orders which will keep them busy on this product for some months to come.

Bell's Patent Roller Flange Seamer.

We give herewith an illustration of a roofing double seamer, on which a patent was recently granted to W. C. Bell of Syracuse, N. Y. It is claimed that this seamer



Bell's Patent Roller Flange Seamer.—Fig. 1.—View of Seamer.

not only does very accurate work, but is so constructed as to stand the severest tests involved in large roofing work. The jaws and folding parts are rigid and not liable to bend out of shape. An important feature is the treadle, which is said to be 1 inch longer than in any other seamers, thereby giving extra leverage sufficient to close the seams watertight and with less exertion. By a lateral construction of the hinge the face or folding side of the treadle is lowered nearly $\frac{1}{8}$ inch closer to the work. It will be seen by this that a narrow and imperfect edge is much more readily closed than is the case where the treadle has a greater swing.

Another advantage is claimed in the improved flanging jaw of the last pair, within which a steel roller is

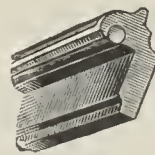


Fig. 2.—Improved Flanging Jaw with Steel Roller.

adjusted, a portion of it projecting below the flange, as shown in Fig. 2 of the accompanying illustrations. As the flange with roller moves over jaw No. 1, as shown in Fig. 1, it carries with it a portion of the metal, forming a continuous flange by rolling it over upon gauge bar No. 1, thus avoiding the scraping process of a rough bar. The roller not only prevents tearing the seams, but makes easier work.

The jaws can also be more closely adjusted, thereby producing a square bend. The extension handles are well proportioned and bend outward at the upper sections, giving the machine a workmanlike appearance. These machines are made in two styles, No. 1 for narrow gauge and No. 2 for wide gauge. The maker states that old seamers of other makes can be supplied with Bell's patent roller flanging bar if desired.

PATTERNS FOR FLARING MEASURE WITH LIP.

(Without allowance for lap.)

In Fig. 1 is shown a finished view of a lipped measure which requires four patterns—namely, the measure, lip, handle and grasp. These measures are usually made from bright IX tin, or copper tinned on the in-

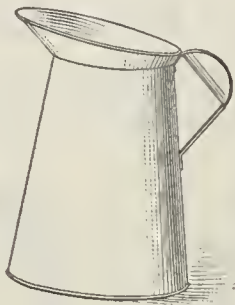


Fig. 1.—Perspective View of Finished Measure.

Now assuming that a measure is to be made holding a given quantity and knowing the size, first draw the vertical line A B in Fig. 2, upon which place the height, as shown by *a b*. At right angles to A B, draw the top and bottom diameters C D and F E respectively, as shown. Extend the lines E D and F C respectively until they meet the center line A B at A. At pleasure draw the angle or flare of the front of the lip, as shown by *d C*, extending the line *d C* until it intersects the center line A B at *c*. From *c* draw a line through D and make D *e* equal to the height of the back of the flare, which is established at pleasure, and draw a line from *e* to *d*. With *a* and *b* as centers, describe the half sections C 4' D and F B E respectively, as shown, both of which divide into an equal number of spaces, as shown by points 1 to 7 and 1' to 7'. At pleasure, draw the handle D *e f J*, and the grasp H.

For the pattern for the measure use A as center, and with radii equal to A D and A E draw the arcs E E' and D D'. At any point, as F', draw a radial line to A,

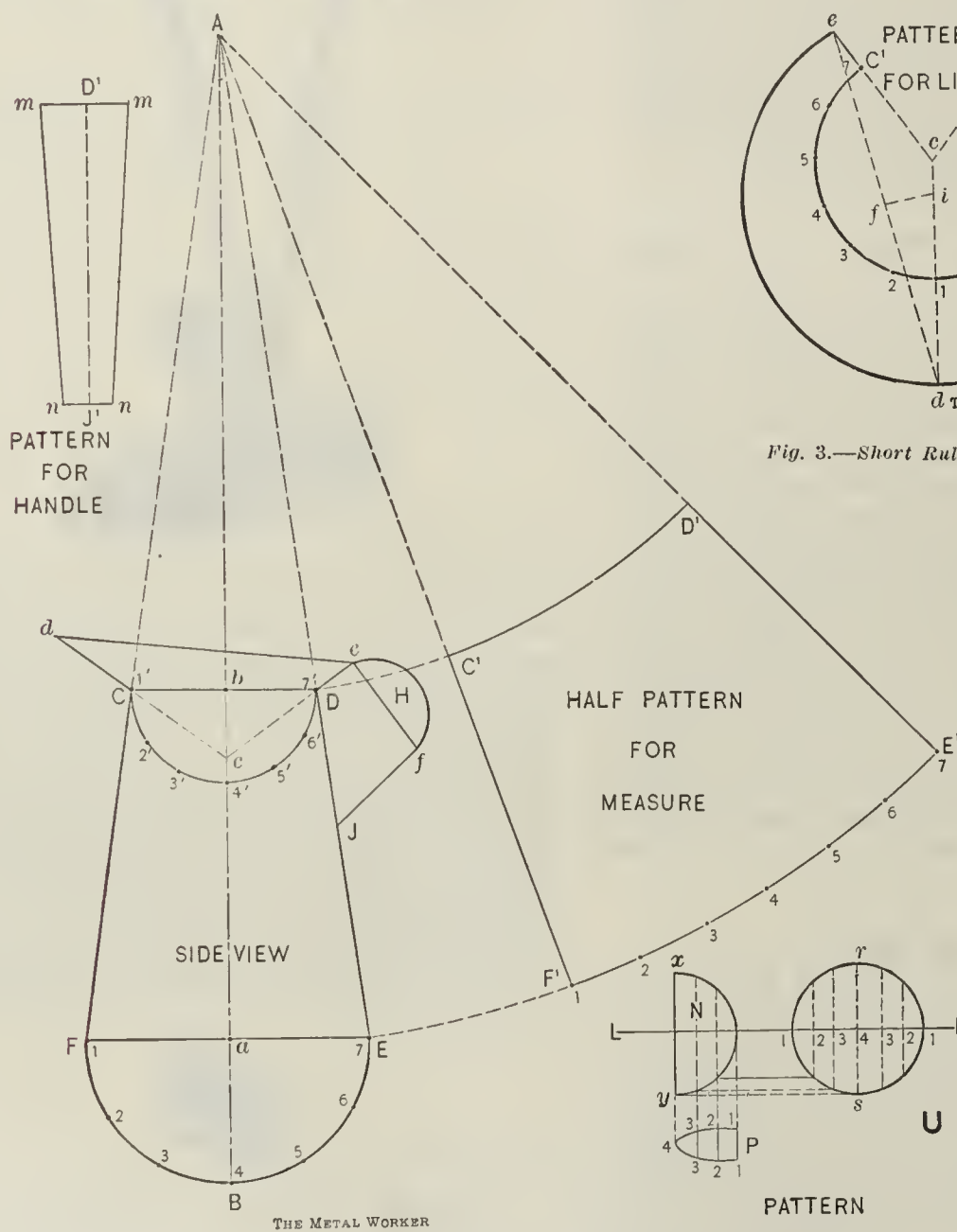


Fig. 2.—Elevation, Sections and Patterns.

PATTERNS FOR FLARING MEASURE WITH LIP.

side, and as they must hold a given quantity and must be tested before they are sold, we present below a table giving the height, bottom and top diameters for different measures from 1 gill to 1 gallon:

Size.	Bottom diameter, in inches.	Top diameter, in inches.	Height, in inches.
1 gill.....	2.06	1.37	3.10
½ pint.....	2.60	1.73	3.89
1 pint.....	3.27	2.18	4.90
1 quart.....	4.12	2.75	6.18
½ gallon.....	5.18	3.45	7.78
1 gallon.....	6.55	4.35	9.80

intersecting the arc D D' at C'. Now, starting from F', lay off on the arc E E' the stretchout of the half circle F B E, as shown by similar figures on F' E'. From the point 7 draw a line to the apex A, intersecting the arc D D' at D'. Then will C' D' E' F' be the half net pattern for the measure.

For the pattern for the handle take a stretchout of D *e f J* and place it on the vertical line D' J', at right angle to which, through points D' and J', draw the top and bottom width of the handle at pleasure, as shown by *m m* and *n n* respectively. Draw lines from *m* to *n*

on both sides; then will $m n n m$ be the net pattern for the handle. The method for obtaining the pattern for the grasp H is shown in diagram U , in which N shows the side view of the grasp enlarged from H and P the true section on the line $L M$ drawn through the center and at right angles to $x y$. Care should be taken that the distance $l l$ in section P is no wider than the width of the handle at f in the side view. Now divide the section P into an equal number of spaces, as shown by the points 1 to 4 on each side, from which parallel to $x y$ draw lines intersecting the curve of the grasp N , as shown. On the line $L M$ lay off the stretchout of the section P , as shown by similar numbers on $L M$. Through these points at right angles to $L M$ draw lines, which intersect with lines drawn parallel to $L M$ from similar intersections in the curve N . Trace a line as shown by $1 r 1 s$, which will be the pattern for the grasp.

While the lip $d C D e$ in side view is a frustum of a right cone and can be developed by the cone method, a shorter rule which can be applied, and which answers the purpose just as well, is shown in Fig. 3. With radius equal to $c D$ in Fig. 2 and c in Fig. 3 as center, describe the arc $C^1 D^1$. From c drop a vertical line $c d$, intersecting the arc just drawn at 1. Now starting from the point 1 set off on either the number of spaces contained in the half section $C 4' D$ in the side view in Fig. 2, as shown by similar numbers on the arc $C^1 D^1$ in Fig. 3. From c draw lines through the points 7 and 7, making $7 e$ on both sides equal to $D e$ of the back of the lip in the side view in Fig. 2. Now take the distance of the front flare of the lip $C d$ and place it, as shown, from 1 to d in Fig. 3. Draw a line from e to d , which bisect and obtain the point f . From f , at right angles to $e d$, draw the line $f i$, intersecting the center line $c d$ at i . Then, using i as center and $i d$ or $i e$ as radius, describe the arc $e d e$, intersecting the radial lines $c e$ and $c e$ at e and e . Then will $e d e D^1 1 C^1$ be the net pattern for the lip.

Standard Tin Plate Company.

A company, with a capital of \$300,000, have been organized at Canonsburg, Pa., under the style of the Standard Tin Plate Company, to build and operate an independent tin plate plant. At a meeting of the stockholders, held last week, the following directors were chosen: W. I. Berryman, S. A. Taylor, Pittsburgh; Joseph Underwood, Roscoe; M. H. Bermis, Albert Ross, Monessen; James E. Elliott, Fayette City; E. Jeffries, J. V. H. Cook, S. L. Kennedy, George C. McPeake, E. B. Boyle, J. L. Cockins, C. C. Johnson, Moses Hickman, E. T. Hitchman. The board organized by electing E. Jeffries president and general manager, M. H. Bermis secretary, and J. V. H. Cook treasurer. Edmund Jeffries, who is the leading spirit of the enterprise, is a practical millman. It is proposed to erect an eight-mill plant, probably on land of the Cecil Improvement Company on the north side of Chartiers Creek, between Canonsburg and Morgantown.

Lion Brand Soldering Salts.

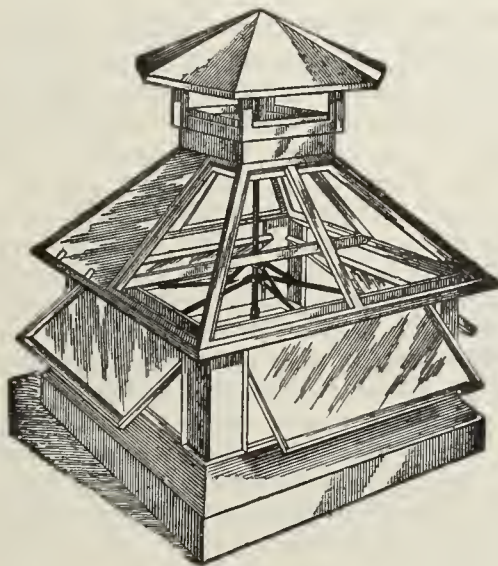
Drake & Mills, Cleveland, Ohio, are introducing to the trade their Lion brand soldering salts. This is a white granular salt put up in $\frac{1}{2}$ and 1 pound bottles. It is claimed to be the best flux possible in all forms of soldering, both for inside and outside work, as it cleans and tins the copper and removes all grease from the work, at the same time making the solder flow readily and evenly. It is cheaper and more reliable than acid, is always ready by the addition of a little water to the salts and can be mixed as needed. The manufacturers point out that the time saved by the use of these salts is quite an item, as the salts dissolve as soon as the water is added and the workman loses no time waiting for the solution to dissolve or by making several attempts to solder the same piece. It is also claimed that neater work is obtainable with the salts, as an even flow of solder is obtained where it is used. These salts have been used for several years by many local firms and its success with them has led the manufacturers to reach out

over a more extended territory. They are now prepared to furnish these salts in any quantity and to ship them to any part of the country.

The Valve-Light Ventilator.

Martin J. Frand & Co., 110 and 112 Arch street, Camden, N. J., are making the patent valve-light ventilator, of which we give an illustration. This ventilator produces the very desirable combination of light and ventilation. Heretofore such a combination was only made possible by the use of unsightly chains, wheels and other complicated devices, which either barred out the light or proved offensive to the eye. It is claimed that in this device these obstacles are entirely removed. In place of a complicated or cumbersome apparatus, there are neat wrought iron rods so arranged that a short movement of the center rod (which is accomplished either by a pole and hook or by use of a chain or cord and wheel, which may be attached to the crossbar), operates the four arms and causes them to open or close the side valves, as the case may be, while the center rod itself, being directly connected with the top valve, operates it.

An important feature of the ventilator is that the valves can be regulated to a large or small opening as desired, and when closed they are absolutely storm proof.



The Valve-Light Ventilator.

Another feature is that it can be used in connection with a ceiling light by simply extending the rod through the same, giving ventilation to the room and also to the space between the ceiling and the roof. The valves have a greater area for the passage of air than the base of the ventilator proper, thus removing any danger of the choked conditions so prevalent in some styles of ventilators. These ventilators are furnished complete with movements and glass, and require only the setting of the glass in place, on the building, to render them complete for use. The material used in the construction is either copper or galvanized iron. The ventilators are regularly made in sizes 30, 36, 48, 60 and 72 inches square, with an additional allowance of $2\frac{3}{4}$ inches all around for curbing. Special sizes are also made when desired.

Follansbee Brothers Company.

Work will be pushed actively on the new sheet and tin plate mill to be erected by Follansbee Brothers Company of Pittsburgh at Mahan Station, near Wheeling, W. Va., and referred to in these columns recently. In addition to four sheet and four tin mills the plant will contain sufficient cold rolling capacity for all the black plate and sheets produced and a galvanizing and corrugating plant will also be operated. The main building will be 480 feet long on one side and 440 on the other side, and will be 205 feet wide, with L's on each end. There will be 16 sheet and pair furnaces and nine gas producers. The boiler house will be 45 x 90 feet. A machine shop, tin house and warehouse will also be erected. Follansbee Brothers Company have 230 acres of land at the above place, and it is probable a large tract of it will be laid out in lots, on which homes will be erected for the employees of the mill.

Some Meurer Goods.

Meurer Bros. Company, Brooklyn, N. Y., have issued an addendum to their catalogue published in 1900, containing some of the new lines of goods which they are manufacturing and handling. Special notice is given to aluminum coated steel, which they recommend for use in place of galvanized iron for roofing and guttering purposes. The company are now making corrugated expanding conductor, round and square, plain round lock seam conductor, riveted and soldered conductor, plain square conductor, half round O. G. and box gutters, corrugated and plain elbows and shoes and adjustable elbows in aluminum coated steel. They claim that, owing to the lasting qualities of this material these pipes and elbows will wear practically as long as the building on which they are used and will not need the constant repairing that galvanized leader and gutter require. They also recommend aluminum coated steel for use in smoke pipes. The company carry smoke pipe of this material in all sizes. Other new goods contained in this addendum are Meurer felt roofing, Meurer roofing paint, Meurer black enamel paint, wall and register boxes, tin starters, oval three-pieced elbows, square tin elbows, oval tin hot air drums and Græco-Roman registers and register borders.

An Improvement in Laying Shingles.

The Galesburg Cornice Works of Galesburg, Ill., who manufacture architectural sheet metal work, have been placing on the market a stamped metal hip shingle for the protection of hips on shingle roofs. The shingles are stamped from tin or galvanized iron in an ornamental design, and are of suitable length to be laid in each course of shingles, so that the hip covering will have sufficient lap, while they are constructed so as to be self adjusting to different widths of shingle exposed to the weather. A small off set or shoulder in the side of the metal shingle, made to fit closely against the butts of the wood shingle, serves as a gauge in putting them on and effectively closing up the inevitable triangular opening that would be left at this point if a continuous metal or wood covering were used. The point is made that while the hip shingles are ornamental and make a pleasing finish for the hip lines of a roof, they are inexpensive, costing only a little more than the plain pieces of tin that are commonly used.

FLASHINGS.

THERE is little room for doubt that the American Tin Plate Company's wage proposition has been rejected by the Amalgamated Association. Whether any further effort will be made to seek an agreement remains to be seen. At present about 130 of the mills owned by the American Tin Plate Company are closed down for repairs or lack of business. This will involve a material reduction in the year's production of Plates.

It is reported that the American Sheet Steel Company's plants at New Philadelphia, Canal Dover, Dresden, Dennison and Canton, Ohio, embracing a total of about 36 hot mills, have been shut down indefinitely. The suspension of operations at these plants is said to be due to a falling off in orders for Sheets. The company seem to be closing down their smaller mills and concentrating the work in the larger plants at the present time.

SOME extensive improvements are being made at the Wellsville, Ohio, plant of the American Sheet Steel Company. Four additional hot mills are being erected with a new building to accommodate them, also additional annealing furnaces, while a fine new office building is in course of erection. The four additional hot mills will make Wellsville a ten-mill plant and give employment to about 200 more men. Two of the new mills are expected to be in operation by September 1, and the other two about January 1.

THE ATLANTA ROLLING MILL & TIN PLATE COMPANY, Atlanta, Ind., have let the contract for the steel construction for their new eight-mill Tin Plate plant to the Garry Iron & Steel Company of Cleveland, Ohio. The engines will be built by the Bass Foundry & Machine

Company of Fort Wayne, Ind., and the mills by the Lloyd-Booth department of the United Engineering & Foundry Company, Pittsburgh.

THE NEW JERSEY GALVANIZING & TINNING WORKS, with principal office at 50 Elm street, Newark, N. J., have been incorporated with a capital stock of \$10,000.

J. CALLAGHAN & SON, sheet metal workers and roofing contractors, have completed their new factory and store building at 623 Superior street, Cleveland, Ohio, and have moved into it from their old quarters on Erie street.

DISTRICT MANAGER C. A. ROBINSON of the American Tin Plate Company has written a letter to the local lodge of the Amalgamated Association at Martin's Ferry, Ohio, stating that the closing down of the Laughlin plant at Martin's Ferry and the La Belle plant at Wheeling, W. Va., was due to lack of orders and not at all to the fact that the workmen had voted against the wage proposition of the American Tin Plate Company or to coerce them to take favorable action on the proposition. Mr. Robinson said that work will be resumed at both of the mills named as soon as sufficient business is secured to enable the company to start them.

THE CADWALLADER TIN PLATE & METAL COMPANY, Pittsburgh, have recently added a new smelting furnace and two refining furnaces to their plant situated at Elizabeth street and the B. & O. Railroad, which puts them in shape to furnish all grades of Terne and Babbit Metals to the trade.

THE TUSCORA STEEL COMPANY of Newcomerstown, Ohio, have arranged with the Allegheny Steel & Iron Company of Pittsburgh to be supplied with Steel Bars for use in their plant, the Tuscora Company furnishing the Allegheny Company in return with Sheets, which are being used to fill regular orders.

THE KAST COPPER & SHEET IRON COMPANY of Buffalo, N. Y., have been incorporated with a capital stock of \$50,000 by Richard Kast, Conrad J. Kast and August Becker.

THE HUB CAN COMPANY of Portland, Maine, have been incorporated with a capital stock of \$10,000 to manufacture Cans. The officers of the company are D. A. Meaher, president, and E. S. Moody, treasurer, both of Portland.

THE PARKERSBURG IRON & STEEL COMPANY, Parkersburg, W. Va., have about completed their new Bar mill and will shortly begin the construction of a new annealing furnace and an addition to their rolling mill.

It is reported that the American Can Company contemplate the building of a Tin Can factory at Woodstown, N. J.

THE newly incorporated Canonsburg Iron & Steel Works, who have purchased the property at Canonsburg, Pa., formerly owned by the American Tin Plate Company, have organized with the following Board of Directors: John F. Budke, John M. Watson, W. H. Paxton, George D. McNutt, Ralph Martin, Geo. Retberg, John G. Paxton, R. L. Park, H. A. Quail. The board effected the following organization: President and general manager, John F. Budke; vice-president and business manager, John M. Watson; secretary, George Retberg; treasurer, W. H. Paxton. The work of remodeling the mill will be begun at once, and the contemplated improvements will make it an up to date plant in every respect.

THE EMPIRE IRON & STEEL COMPANY, Niles, Ohio, are installing a Sheet Bar mill in their new plant.

THE ROLLING MILL COMPANY OF AMERICA are installing a blooming mill and a bar mill in their new plant at Morgantown, W. Va.

THE ALAN WOOD IRON & STEEL COMPANY are erecting a Billet and Slabbing mill at their plant at Conshohocken, Pa., to roll Bars for the Alan Wood Company's Sheet plant. The open hearth department will have a sufficient Steel capacity to supply the company's Sheet department and leave a surplus of about 100,000 tons annually.

It is reported that in consequence of the recent strike at the mills of the Ashland Sheet Mill Company, Ashland, Ky., owing to the refusal of President I. A. Kelly to sign the scale of the Amalgamated Association, the plant will hereafter be operated as an open mill. The

company state that they will pay strictly the Amalgamated Association scale of wages, but will not recognize any association or union. All grievances will be taken up with the employees individually and differences adjusted to mutual satisfaction. The striking members of the Amalgamated Association at the Ashland plant declare that they will not return to work under these conditions. The Ashland Sheet mill has been in operation only three or four months.

A NEW LODGE of the Amalgamated Association of Iron, Steel and Tin Workers was recently inaugurated in connection with the plant of the Jackson Iron & Tin Plate Company, Clarksburg, W. Va.

It is stated that the Jackson Iron & Tin Plate Company, Clarksburg, W. Va., will shortly begin the construction of an additional plant of eight mills for the manufacture of Black Sheets for stamping purposes.

THE ENAMEL STEEL TILE COMPANY, recently organized at Bellaire, Ohio, with a capital stock of \$50,000, have purchased a building and are now vigorously pushing the work of building furnaces, placing machinery, &c., for the extensive manufacture of their Enamel Steel Tile, for wainscoting, ceilings, mantels, hearths, &c. This Tiling will be made in all sizes, designs and colors, bringing out mottled effects. The manufacturers claim that it will not craze or chip off, never requires repainting and can be cleaned like china. The company's offices are located in their factory building, at the corner of Twenty-eighth and Water streets, adjacent to all railroads and the business center of the city.

Two Sheet mills are running at the present time at the plant of the Tuscora Steel Company, at Newcomerstown, Ohio, and two additional mills will be placed in operation later.

W. C. REILLY, auditor and acting superintendent of the Youngstown Iron, Sheet & Tube Company, Youngstown, Ohio, has been appointed general superintendent of the plant.

THE GALVANIZED IRON COMPANY of the City of Mexico, a successful concern in which citizens of the United States are interested, held a general meeting of their stockholders August 1.

THE report that the works of the Ohio Galvanizing & Mfg. Company, Niles, Ohio, had been shut down for an indefinite length of time on account of the strike is incorrect. The strike caused them to close down for only three days, and they are now running as usual.

THE FERGUSON TIN PLATE COMPANY, INCORPORATED, of Pittsburgh, have been granted a charter with a capital of \$20,000. They will take over the present business of the Ferguson Tin Plate Company, operating a dipping plant in that city.

To make a ventilating Skylight a pleasure to the owner it must operate easily and smoothly, and the G. Bickelhaupt Skylight Works, 243 and 245 West Forty-seventh street, New York, call attention to their G. B. Skylight Lift and the G. B. Automatic Self Locking Scuttle Opener, which is said to be safe, secure and affording a quick escape in case of fire. They have gotten out a pamphlet giving full particulars.

THE ART MODELING WORKS, 832 Market street, Camden, N. J., make a specialty of preparing Dies for all kinds of Artistic Metal Work, Statuary, Ceiling and Side Wall Panels, Vanes, Finials and special designs. They are prepared to work directly from architects' drawings, and cornice makers who require work that they are not equipped to make are invited to correspond to secure information on such work.

THE NIAGARA MACHINE & TOOL WORKS, Buffalo, N. Y., are calling attention to the large variety of Foot and Power Working Squaring Shears they make having capacity for cutting from 2 to 11 feet and from the lightest sheets to 1/4-inch plate.

THE GEORGE A. HOGG IRON & STEEL FOUNDRY COMPANY of Pittsburgh, Pa., are equipping the annealing furnaces of the American Tin Plate Company's National Works, at Monessen, Pa.; United States Works, at Demmler, Pa., and American Works, at Elwood, Ind., with the Freeman Patent Furnace Charger.

THE LETTER BOX.

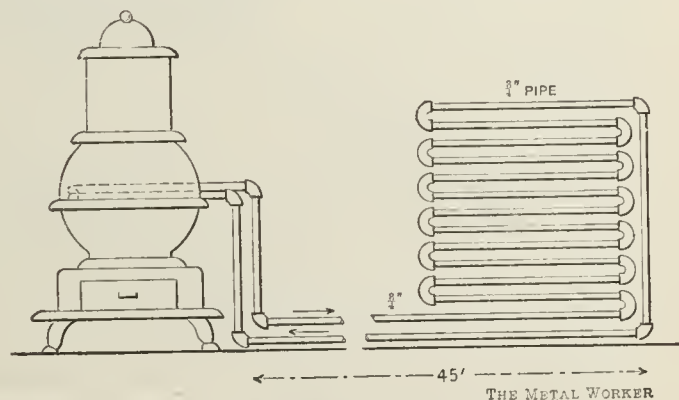
Inquiries in regard to practical questions of general interest are invited, in reply to which we shall be glad to receive suggestions and information from our readers.

Correspondents are requested in all cases to give their names and addresses, which will not, however, be published or disclosed without their consent.

HEATING MAIN SHOULD RISE.

From M. & M., College Corners, Ohio.—Will you please inform us if the method of piping to a radiating coil from a stove, shown in the accompanying sketch, is calculated to secure a good circulation and satisfactory heating? We aim to run a coil of 1 1/2-inch pipe through the fire twice, then reduce it and connect it with a 3/4-inch pipe, carrying the hot water from the heating coil to a radiating coil and returning by means of a 3/4-inch pipe to the coil in the stove again, as shown. Both of the pipes will run a distance of about 45 feet and practically on a level. Will the water circulate properly with the pipes run in this way? Would it be better to have the cold water return pipe carried under the floor?

Note.—It would be far better to use 1-inch pipe between the heating coil in the stove and the radiating coil, and this pipe should be carried up to the ceiling and then run over to the coil, where it should drop down and connect with it. At the highest point an expansion tank should be connected; otherwise if the



Heating Main Should Rise.

system was full of water the expansion of the water on heating would be sufficient to burst it at the weakest point. The size of the room in which the radiating coil is to be placed and the amount of surface which it is to expose are not given, nor is the size of the fire chamber in the stove. The flow and return pipes, however, being 45 feet long, will expose a surface, if of 1-inch pipe, of 30 square feet, and unless very carefully covered would throw off a great deal of heat from the water and leave very little for the radiator. In a heating system of this character it is doubtful if the fire in the stove could be run sufficiently hard, and if there would be enough of it for 1 square foot of heating surface in the pipe coil to carry more than 15 to 20 square feet of surface in the flow and return pipes and the radiating coil. Consequently, unless the flow and return pipes were covered, 2 square feet of the surface exposed in the heating coil, or 4 lineal feet, would be required for keeping up the temperature in the flow and return mains. If the radiating coil was to expose 30 feet of surface it would take about 4 feet more, or 8 feet altogether, of 1 1/2-inch pipe in the stove.

When water is carried so far it is probably better to estimate that 1 square foot of surface in the radiating coil would not heat more than 25 cubic feet of space in the room to be heated. In fact, the size of the room to be heated governs the size of the coil that must be placed in the stove. With the information given, our correspondent can doubtless make the necessary calculations to determine the advisability of his scheme. The piping, however, must be so run that all air can escape as it is filled with water, and the expansion tank must contain as much space as at least 1-23 of the bulk of

the water that is required to fill the piping; otherwise when it is heated and expanded it would overflow.

The book "Kitchen Boiler Connections," which can be furnished by our Book Department, has two chapters devoted to similar work.

PATTERN FOR A "HEAD" TO FILL THE END OF A CORNICE CUT OFF OBLIQUELY.

From G. E., New York City.—Please inform me through the columns of *The Metal Worker* how to cut the pattern for a "head," or end piece, to fill the end of a cornice when the latter is cut off at an angle other than a right angle, as shown in the sketch sent herewith.

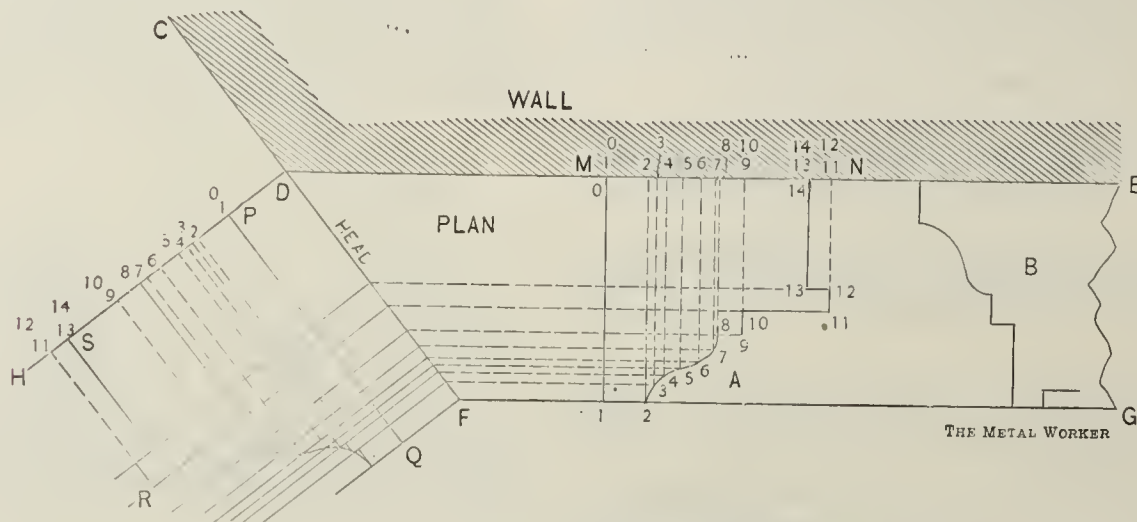
Answer.—In the accompanying illustration is shown a reproduction of our correspondent's sketch, together with the method of laying out the required end piece. In the sketch the profile of the cornice is drawn in the manner shown at B, which position would be correct were the view an elevation instead of a plan. As the profile shown is that usually employed in a crown mold, it is clear that it should occupy the position shown at A, since the points 1 and 2, being its points of extreme projection, should be on the line F G, which is the line of extreme projection from the wall in plan. We call

tersection on D F carry lines at right angles to the same indefinitely, as shown at the left. From the several points in profile A also carry lines at right angles to D E, cutting the same as shown by the small figures between M and N; corresponding with those of the profile. Now transfer the points in M N to the line D H, seeing that each point maintains the same relative distance from all of the other points, as on M N; and from each of the points on D H project lines at right angles to the same cutting lines of corresponding number previously drawn from D F. A line traced through the points of intersection, as shown by O P R S, will be the shape of the required end piece.

The miter of the cornice moldings to fit against the end piece is an ordinary butt miter, of which D E is the miter line, and the same set of points may be used with convenience in cutting both pieces.

PATTERNS FOR A CHIMNEY TOP.

From Henry Weyand, Waterbury, Conn.—In *The Metal Worker* of August 2, 1902, in answer to an inquiry from "J. L., New Brighton, S. I.," you have presented a pattern of a chimney top which, if manufactured, we would consider an infringement on our ventilator, styled



Pattern for a "Head" to Fill the End of a Cornice Cut Off Obliquely.

attention to this because a correct drawing is the first essential to a correct result. Failure or inability to develop the pattern results in many instances from the fact that a drawing has not been first made in which the required conditions are correctly shown.

There is also some doubt implied in the sketch as to whether the angle in the wall at which the cornice ends is an interior or an exterior angle. It would seem rather to show an interior angle, but since if it were an interior angle the end of the cornice would come against the wall on the other side of the angle, and would therefore scarcely require a full end or "head," we have in our drawing shown a cornice at the end of a wall terminating with an exterior angle. In either case the method employed is the same. Care must be taken, however, to see that the profile is correctly placed—that is, with the points 0 and 14 at the wall line, and the points 1 and 2 at the line of extreme projection. Therefore, if C F G were the wall line instead of C D E, as shown, and D E were the line of extreme projection, instead of F G, the profile should be turned over so that the points 0 and 1 would change positions with each other.

Considering, then, that C D E is a plan of the wall, and that F G is the line of extreme projection of the cornice, we first extend the line C D, as shown, by D F, this line showing the position in plan of the end or "head" required to fill the opening produced by the oblique termination of the cornice. Divide the curved portions of the profile into any convenient number of spaces and number all points and angles of the profile, as shown by the small figures on profile A. From each of the points project lines parallel to D E, cutting the line D F, as shown, and from the several points of in-

the new Pancoast patent ventilator and chimney cap, letters patent on which were issued to R. M. Pancoast on March 27, 1900, the number of the patent being 646,371. We purchased this patent from the inventor, R. M. Pancoast, and inclose Patent Office literature in support of our claim. We of course understand that you submitted this plan, being unaware of the fact that the same would conflict with our patent, and we now ask you to publicly give us credit for the ownership of the patent in the next issue of *The Metal Worker*.

RUSTING OF GALVANIZED IRON ROOF.

From J. P. F., Hartford, Conn.—Having noticed in your issue of August 9 a complaint from "C. & H." regarding the rusting of a galvanized iron roof, I would say: Never lay a new metal roof of any kind over the old metal roof. Rip it off. It does not allow condensation to dry. The roof boards will absorb it. A rosin sized sheathing paper is desirable. The same applies to the mistake frequently made of laying a new gutter over an old one. If there is a closed space between the roof and the ceiling, ventilators or openings in the wall should be applied at the front and rear. If the ceiling comes close against the roof boards, ventilators are also necessary.

WHO MAKES THE NEW MODEL BENCH DRILL?

From Charles Schneider, Catasauqua, Pa.—I should be glad to learn where I can secure repairs for the New Model bench drill, made by J. W. Manus of Rochester, N. Y., who seems to have gone out of business.

TRADE REPORT.

MARKET SUMMARY.

Pig Tin is quiet and has declined $\frac{1}{2}$ c. in price.
Copper is in light demand and slightly lower.
Pig Lead is dull and firm.
Spelter continues scarce and strong, with light demand.
Antimony is unchanged and quiet.
Nickel is in fair demand and slightly lower in large lots.
Aluminum is firm and in good demand.
Tin Plates are very quiet and unchanged in price.
Black Sheets are very quiet, with prices tending lower.
Galvanized Sheets are extremely dull.
Wrought Scrap Iron is strong and higher.
Scrap Brass and Copper are dull and weak.
Foundry Iron is very scarce and prices nominal.
Sheet Copper is in fair demand and firm in price.
Sheet Zinc is firm; demand is moderately active.
Hardware is active for the season and prices are strong in most lines.
Plumbers' Supplies are in fairly strong demand, with prices ruling firm.
Wrought Steel Sinks are about 10 per cent. higher and active.
Radiation was advanced 5 per cent. on August 12, owing to high price of Iron.
House Heating Boilers have been marked up 5 per cent. for the same reason.
Sad Irons are 5c. to 10c. per set higher.
Washing Machines have been advanced 25c. to 50c. each.
Wire Nails are in fair demand, with prices firm.
Cut Nails are unchanged and in moderate demand.
Linseed Oil is in moderate demand at former prices.
Spirits Turpentine is about $\frac{1}{2}$ c. a gallon higher in price.

METAL MARKET.

NEW YORK, August 15, 1902.

Pig Tin.—A decided change has come over the Tin market since last week. Prices have tended downward, owing to an abrupt decrease in manipulation and freer arrival of the metal at this port. The consumptive demand is not quite as good as it has been, and reports from Tin Plate manufacturers are decidedly averse to any increase in the consumption of Tin for this industry in the near future, owing to the closing down of a large number of mills. Prices rule about $\frac{1}{2}$ c. below those of a week ago. Jobbers quote Straits Pig in small lots at 29c. to 29 $\frac{1}{2}$ c. per lb. The arrivals so far this month aggregate 1430 tons, and another steamer, now overdue, has 874 tons on board.

Copper.—The market for Copper has declined perceptibly in the past week and closed with a very weak tone. Offerings have been heavy and buyers seem indisposed to purchase beyond the limit of their actual current needs, preferring to await further developments in the market. Jobbers quote Lake Ingot in small lots at 13c. per lb. and Casting Copper from 12 $\frac{1}{2}$ c. to 12 $\frac{3}{4}$ c.

Sheet Copper.—A good demand for Sheet Copper continues and the outlook favors a steady continuance of business in this material, a large amount of which is being used in high class building operations all over the country. Prices remain firm on the basis of 18c. per lb. from store.

Pig Lead.—The market is entirely unchanged, remaining quiet and steady at the prices ruling for some considerable time past. American Pig in small lots is quoted at 4.45c. to 4 $\frac{1}{2}$ c. per lb. St. Louis advices report the volume of transactions in the Lead market at that

point as showing but slight variation from that reported the previous week, with quotations unchanged.

Spelter.—The firm tone in the Spelter market is maintained and prices have continued to advance. The scarcity of spot metal is unbroken and the market is further strengthened by the advices from the West, which indicate extreme firmness. Jobbers quote good Western brands in small lots at 6c. to 6 $\frac{1}{2}$ c. per lb.

Sheet Zinc.—The demand for Sheet Zinc is of the usual proportions, and prices are firm and unchanged at 6 $\frac{3}{4}$ c. per lb. for 600-lb. cask lots and 7 $\frac{1}{4}$ c. to 7 $\frac{1}{2}$ c. for smaller quantities.

Antimony.—No change is noted in this metal. Cookson's in small lots is quoted at 10 $\frac{1}{4}$ c. to 10 $\frac{1}{2}$ c. per lb., Hallett's at 8 $\frac{5}{8}$ c. to 8 $\frac{7}{8}$ c. and U. S. at 8 $\frac{1}{2}$ c. to 8 $\frac{3}{4}$ c.

Nickel.—The price of this metal in the wholesale market shows a further decline, although no change has been made in retail quotations, which rule at about 55c. to 60c. per lb. for small lots.

Aluminum.—The demand for Aluminum continues active and prices remain at their former level, small lots of No. 1 Ingot, guaranteed 99 per cent. pure, being quoted at 37c. per lb. and 100-lb. lots at 35c.

Tin Plates.—Conditions in the Tin Plate market do not vary from those outlined in our reports for the last few weeks. The demand is slow so far as business of any proportions is concerned, although a better volume of orders was noted among the retail trade this week. Stocks are understood to be accumulating at mills, but the closing down of a large proportion of the American Tin Plate Company's capacity will probably tend to counteract any excessive surplus and prevent radical decline in prices. Prices for small lots show no change. Jobbers quoting American Bessemer Coke Plates, IC, 14 x 20, in moderate size lots, delivered at New York and corresponding points, at about \$4.70 to \$4.90 per box.

Sheets.—Comparatively little demand is noted for Black Sheets, especially for those of the lighter gauges, and some shading of prices is said to have been done by some of the independent mills who are seeking business. The market, however, does not show any general decline. Jobbers quote No. 27 One Pass Cold Rolled Soft Steel Sheets in small lots at about 3.70c. The Galvanized Sheet trade is in a very unsatisfactory shape, orders having fallen off materially. Small lots are quoted at 4.55c. to 4.65c. for No. 27. It is said that some Black Sheets are being sold by mills for next year's delivery at current rates, the mill guaranteeing against a decline.

Chicago advices are as follows: Some little improvement is noted in the demand for Light Sheets and the market is less depressed, but Galvanized are still slow. Quotations are as follows: No. 27 Black Sheets, in small lots from store, 3.45c. to 3.55c. Galvanized Sheets in small lots from store are sold at 4.55c. to 4.65c. for No. 27.

Old Metals.—The market for Scrap Iron continues strong. Wrought Scrap is in particularly good demand and has advanced in price. Scrap Copper and Brass are weak. Dealers are paying about the following rates for moderate sized lots delivered at New York or corresponding points:

Heavy Copper	per lb.	10 c.
Light and Tinned Copper	per lb.	9 c.
Heavy Brass	per lb.	8 c.
Light Brass	per lb.	6 $\frac{1}{2}$ c.
Lead	per lb.	3 $\frac{3}{8}$ c.
Tea Lead	per lb.	3 c.
Zinc	per lb.	3 $\frac{1}{4}$ c.
Pure Aluminum Sheet	per lb.	22 c.
Cast Aluminum	per lb.	17 c.
No. 1 Pewter	per lb.	18 c.
No. 2 Pewter	per lb.	9 c.
Tin Plate Scrap, per gross ton		to \$5.00
Wrought Iron Scrap, per gross ton		\$15.00 to 15.50
Heavy Cast Scrap, per gross ton		12.50 to 13.00
Stove Plate Scrap, per gross ton		9.50 to 10.00
Burnt Iron, per gross ton		7.00 to 7.25

THE PIG IRON MARKET.

NEW YORK.—The market is a little quieter, with quite free offerings of foreign Pig Iron for early and extended delivery. Quotations for spot Iron are difficult to make, the price depending entirely upon the necessities of the buyer. For delivery in 1903 the following quotations are made: Northern Iron, at tidewater, No. 1 X, \$22.75 to \$24.75; No. 2 X, \$21.75 to \$22.75; No. 2 Plain, \$20.75 to \$21.75. Tennessee and Alabama brands, in New York and vicinity, No. 1 Foundry, \$22 to \$23; No. 2 Foundry, \$21.25 to \$22; No. 3 Foundry, \$20.75 to \$21.25.

CHICAGO.—The withdrawal of more than half the Southern furnaces and the sale of nearly three-quarters of the output of the South for delivery during the first half of 1903 proves the stringent conditions in the Pig Iron market. The principal Northern furnaces, too, can take little more tonnage for the first half of next year. The result is an advance of 50c. to \$1 per ton on Southern Iron, and from \$1 to \$2 per ton on Northern Iron; and in some instances even higher prices are demanded. The volume of business has been less during the week, due more to the inability of the furnaces to contract than to any cessation in the demand. While sales of Southern Iron have been made to a moderate extent on a basis of \$17 for No. 2 Foundry, Birmingham, other furnaces are demanding and obtaining 50c. to \$1 per ton more. A few lots of spot Iron have been sold in single carloads at \$26.15 for No. 1 and \$25.65 for No. 2 Foundry, but scarcely any more Iron can be obtained at these prices. The following are the prices current for July, 1903:

Lake Superior Charcoal.....	\$26.00 to \$27.00
Local Coke Foundry, No. 1.....	22.50 to 23.00
Local Coke Foundry, No. 2.....	22.00 to 22.50
Local Coke Foundry, No. 3.....	21.50 to 22.00
Local Scotch, No. 1.....	23.00 to 23.50
Southern Coke, No. 1.....	21.90 to 22.40
Southern Coke, No. 2.....	21.15 to 21.65
Southern Coke, No. 3.....	20.65 to 21.15
Southern Coke, No. 1 Soft.....	21.65 to 22.15
Southern Coke, No. 2 Soft.....	21.15 to 21.65

PHILADELPHIA.—American Iron for prompt delivery is scarcer than ever; it is no longer a question of price, but of absolute inability to supply the demands of consumers. Those who can spare a little Iron for their customers get \$23 to \$23.50 for No. 2 X Foundry, and in some cases \$24 and more has been paid, with little or no chance of lower prices this year, as there is practically no Iron for sale. For the first quarter of 1903 considerable business has been done at about \$22.50 for No. 2 X Foundry, and for the second quarter at \$22. Scotch Irons demand \$22 to \$22.50 for some brands, but a few of the best bring \$23.50 to \$24, delivered in buyers' yards, the general market being about as follows for city or nearby deliveries during the first half of next year, with a premium of \$1 to \$1.50 per ton on this year's delivery:

No. 1 X Foundry.....	\$23.50 to \$24.50
No. 2 X Foundry.....	22.00 to 22.50
No. 2 Plain.....	21.00 to 22.00

PITTSBURGH.—Buying of Foundry Iron for next year has dropped off considerably, although some fair sized orders were taken this week. A number of the largest foundries of this district are still holding off, but are expected to come in early next month. There is a heavy demand for small lots of spot Foundry, and as high as \$25 has been paid for No. 2. For next year we quote No. 2 Foundry at \$21.50 to \$22.50, Pittsburgh.

CINCINNATI.—A considerable amount of Pig Iron was sold this week for delivery during the first half of next year. Many of the Southern furnaces have instructed their agents to sell no more Iron for them, as they are practically out of the market for an indefinite period. The basis on which Southern Iron is being sold is that of \$17.50, Birmingham, for No. 2. Northern furnaces have been selling considerable Iron for next year's delivery on the basis of about \$22.50. We quote, f.o.b. Cincinnati, for 1902 delivery, as follows:

Southern Coke, No. 1.....	\$22.75 to \$26.25
Southern Coke, No. 2.....	22.25 to 25.75
Southern Coke, No. 3.....	21.75 to 25.25
Southern Coke, No. 4.....	20.75 to 21.75
Southern Coke, No. 1 Soft.....	22.75 to 26.25
Southern Coke, No. 2 Soft.....	22.25 to 25.75
Ohio Silvery, No. 1.....	26.10 to 26.60
Ohio Silvery, No. 2.....	25.85 to 26.10

Lake Superior Coke, No. 1.....	26.10 to 26.60
Lake Superior Coke, No. 2.....	25.60 to 26.10
Lake Superior Coke, No. 3.....	25.10 to 25.60

CHICAGO REPORT.

Scrap Iron and Steel.—The offerings have been light and with a good demand from dealers the market has been strong with further advances paid for Wrought Scrap and Breaking Stock. The following are the prices paid by dealers in carload lots, Chicago:

	Per net ton.
Country Wrought Scrap.....	\$15.00 to \$16.00
Machinery Cast.....	13.50 to 14.00
Malleable Cast.....	12.00 to 13.00
Stove Plate (free from burnt).....	10.00 to 10.50
Burnt Iron and Grate Bars.....	8.00 to 9.00
Sheet Iron and Hoops.....	8.00 to 9.00
Plow Steel.....	12.00 to 13.00
Breaking Stock.....	11.00 to 12.00
Old Boilers—whole (Iron).....	9.50 to 10.00
Old Boilers (Iron) cut in single Sheets and Rings.....	13.00 to 14.00
Old Gas Pipe and Boiler Tubes.....	13.00 to 13.50
Cast Borings.....	9.00 to 9.50
Turnings.....	12.50 to 13.00
Horseshoes.....	14.50 to 15.00

Old Metals.—The market has been slow and weak for Copper and Brass, with prices of nearly all kinds lower. Zinc, however, has been in good demand and stronger, with higher prices paid. The following are the prices paid by dealers in this market:

	Per lb.
Copper Wire and Heavy.....	10½c.
Copper Bottoms.....	9½c.
Copper Clips.....	10½c.
Red Brass.....	10½c.
Yellow Brass.....	8 c.
Red Brass Borings.....	9½c.
Yellow Brass Borings.....	7½c.
Light Brass.....	6½c.
Pipe Lead.....	3.70c.
Tea Lead.....	3.35c.
Zinc.....	3.45c.
Tin Foli.....	21 c.
Pewter, No. 1.....	18 c.
Pewter, No. 2.....	11 c.
Aluminum.....	20 c.

Old Rubber.—The market has been easier, with more ample supplies and only a moderate outlet. Outside Tubing is lower. Dealers buy at the following prices, Chicago delivery:

	Per net ton.	Per lb.
Garden Hose.....	\$25.00	.....
Air Brake Hose.....	45.00	.....
Rubber Shoes.....	.....	7 c.
Rubber Car Springs.....	.....	5 c.
Inside Bicycle Tubing.....	.....	22 c.
Outside Tubing.....	.....	5 c.
Black Rubber.....	.....	4 c.
White Rubber.....	.....	8½c.

Rags.—The market continues to improve in tone, with only moderate receipts and a fair demand from dealers, who are paying 75c. to 85c. per 100 lbs. for Country Mixed Rags, Chicago delivery.

Anthracite Coal.—The local market naturally reflects conditions in the East and dealers anticipate that local supplies, while light, will be ample to meet necessities until the resumption of work at the mines, which is anticipated early in the winter at the latest. There has continued to be a moderate movement on old contracts. The following are the prices current, subject to a discount of 10c. per ton for shipments made during the month of August:

	Grate.	Egg and Stove.
Chicago.....	\$5.75	\$6.00
Milwaukee, Wis.....	5.75	6.00
St. Louis.....	6.20	6.45
Kansas City, Mo.....	8.25	8.50

THE W. J. CLARK COMPANY, Salem, Ohio, who make the improved Fire Hose Couplers known as the Quick-as-Wink, report a fine trade in those Couplers. The trade in them has been growing steadily since their first introduction some years ago, but too slowly for much profit until within the past few years. The Couplers have advertised themselves splendidly in cities and towns where they have been in use, so that now the demand for them has made it necessary to increase facilities for turning them out.

W. B. HARRIS, ROBERT STEINER AND R. M. MOTHNER have incorporated the Steiner-Harris Oil Burner Company of Beaumont, Texas, with a capital stock of \$5000, to manufacture Oil and Gas Burners.

THE HARDWARE TRADE.

The most interesting feature of current business is the urgency with which manufacturers of general Hardware are solicited to hasten deliveries on orders booked in June and July. Such orders are not old, when present conditions are considered, and shipments in three months would be deemed a good delivery; but the buyers say they are running short of goods and must have additional supplies. Some of the most urgent appeals come from merchants who were not long since of the opinion that they were comfortably stocked. The heaviest demand for quicker shipment comes from the West, where the influence of the heavy crops is always felt earliest. Factories are running to their full capacity and are unable to accumulate stock. If jobbers are already running short the scarcity will be pronounced when fall trade is in full swing. In some branches, notably in those in which great combinations are operating, increasing competition has brought about an oversupply and some weakening in prices is seen, as, for instance, in Wire Nails, Sheets, Tin Plates and Shovels. In view of the experience of the past year, however, weakness in these lines is not necessarily to be expected to extend to other branches of the Hardware trade. The prospects for a large volume of business as the fall opens up are too good for the general line to be affected. On the other hand, the demand may be found sufficiently heavy as the season advances to take up the capacity of establishments in those branches which are now suffering from overproduction.

NOTES ON PRICES.

Lead Goods.—The advent of the new combination of Lead interests is causing considerable uneasiness to the Lead trade. It seems to be the object of the promoters of the consolidation to compel the manufacturers of Pipe, Sheet and Traps and Bends to dispose of their plants and good will at prices named by the promoters. To show that the promoters of the scheme mean business and that they are in the market as competitors of the older established houses, they have this week issued prices to the wholesale trade which show a cut under the prices prevailing for some time. The lines affected are Lead Pipe, Sheet Lead, Red Lead, Lead Ferrules, and in fact the complete line made by the concerns for whose plants the proposed combination could not secure satisfactory options. In some quarters the issuing of the prices unsolicited is looked upon as an effort on the part of the combination to feel their way in the market and determine, if possible, whether or not trade can be secured by direct competition. If this is found to be the case, and trade can be secured directly to a satisfactory extent, it is the opinion of those who have authority to speak, that the trust will refuse to purchase the old established concerns and simply fight them out with low prices and a curtailed supply of raw material. It will take but a short time to determine the issue, and if the result is not satisfactory efforts are likely to be made again to procure options on the principal plants controlling the Lead business.

Cast Iron Soil Pipe and Fittings.—The outlook of Cast Iron Soil Pipe and Fittings is, from the manufacturer's point of view, very encouraging, but from the jobbing and retail point of view it is unsatisfactory. The business at the present time is very good, and if the present demand continues the trade may expect an advance in the very near future. The principle on which almost all advances have been made in this line has been to reap a profit when there was a demand for the ware. There are very few of the manufacturers who have been compelled to purchase their Pig Iron or other raw material at the present prices, but they are extremely anxious to advance in accordance with the market. All of the manufacturers are said to be making handsome profits on their output and there is no fear of the market suffering a backward movement. The price of the raw material alone will at the present time keep the market steady, and if the present satis-

factory demand continues prices must certainly be advanced.

Wrought Steel Sinks.—The demand for Wrought Steel Sinks is referred to as very active this season, and prices on these goods have been advanced about 10 per cent., owing to the high price of the raw material.

Radiation.—The manufacturers of Radiators, on the 12th inst., announced an advance of 5 per cent. in the price of all Radiators.

House Heating Boilers.—An advance of 5 per cent. was made on the 9th inst. by the manufacturers of House Heating Boilers. The advance was rendered necessary by the condition of the iron market.

The United States Heater Company, Detroit, New York, Chicago and Philadelphia, under date of August 9, withdrew previous quotations on the Capital and Capital Mascot Boilers, and announced new discounts, showing an advance approximating 5 per cent.

Sad Irons.—The market on Sad Irons has been increasing in strength for some time past, owing to the advance in the price of iron and the heavy demand for the goods. Recently the manufacturers have advanced their prices 5 to 10 cents per set.

Washing Machines.—The high prices ruling for lumber and iron have caused an advance of 25 to 50 cents each to be made by the manufacturers in the price of Washing Machines.

Cadwallader Tin Plate & Metal Company, Pittsburgh, Pa., are sending out a card quoting special prices on the high grade Bright and Roofing Tin Plates of their manufacture. C. D. Rounds, Central Square, N. Y., is their New York representative.

Babbitt Metal, Solder, &c.—More-Jones Brass & Metal Company, St. Louis, Mo., issue a folder giving special quotations on Babbitt Metal, Solder and Metals, in which they call particular attention to the prices given on Solder.

Wire Nails.—Wire Nails from store are moving in fair quantities. Prices are well maintained. Small lots from store, New York, are quoted at \$2.25 to \$2.30 per keg.

Cut Nails.—The market continues unchanged, with a moderate demand. Iron Cut Nails are still scarce and command a premium over Steel. Small lots of Cut Nails from store, New York, rule at \$2.30 per keg.

Linseed Oil.—The demand for Linseed Oil in this market is confined to small lots. Prices are unchanged. City Raw in a retail way sells at 68 to 68½ cents per gallon.

Spirits Turpentine.—The demand for Turpentine has been larger during the week than for some time, owing to the low prices ruling. Stocks were materially reduced at this point, and a higher market resulted. Retail quotations are about ½ cent above last week's prices, at 47½ to 48 cents per gallon.

TRADE NOTES.

RAPID progress is being made in the erection of the new plant of the American Tube & Stamping Company at Bridgeport, Conn. The main building, which will contain the rolling mills and open hearth plant, will be 110 x 610 feet in area, and the machine shop 90 x 450 feet.

THE CLARK NOVELTY COMPANY, Rochester, N. Y., are sending out a little pamphlet devoted to Brass Faucets adapted for use on milk cans, cream separators, water coolers and oil tanks and for similar purposes. These Faucets, which are made in a variety of styles, are shown by means of wood cuts and half-tone engravings. Capping Steels for the use of canned goods packers and the Clark kerosene oil system of heating furnaces for tinsmiths and other mechanics are also shown.

It is announced that the Adamite Abrasive Company of Valparaiso, Ind., have bought a site at North Tonawanda, near Buffalo, N. Y., and will complete a factory there for the manufacture of Emery Wheels and other Emery Wares. They will import their ore from Austria. The plant will be operated by electricity from Niagara Falls.

THE WONDER WASHER & WRINGER COMPANY have been incorporated at Lewiston, Maine, with \$100,000 capital, to manufacture Washing and Wringing Machines invented by John R. Nye.

THE FRANKLIN SPECIALTY COMPANY, 627-631 Franklin street, Reading, Pa., are distributing through the mails an illustrated circular calling attention to their Nickel Plated Hammers, Hardware and Household Specialties. These include the Cracker Jack Hammer, the Korker Hammer, the Winner and Full Weight Hammers, the Imperial Roller Towel Rack, the Marvel Rotary Nutmeg Grater, the Clark Hatchet, the Royal Iron Stand, the Acme Pot Stand, the Dandy Ice Pick and the Perfection Clothes Line Hook. The company also announce that they are prepared to do any work in the line of nickel plating.

THE WALLACE MFG. COMPANY, Detroit, Mich., have secured permanent quarters at 21 Jefferson avenue and are now running full time turning out about 100 Hilliker Flame Bake Ovens and Steam Cookers per day. They announce that in a very short time they will begin the manufacture of a new patented Flue Thimble, and also from time to time they will place upon the market culinary articles made of sheet iron and steel.

UNDER date of 29th ult. the Kirk-Latty Mfg. Company, Cleveland, Ohio, announce that in connection with the manufacture of Bolts, Nuts, Rivets, Screws, Tacks, &c., they are now operating an Express Wagon department, and are in a position to accept orders for Boys' All Steel Express Wagons and Velocipedes, Toy Wheel Barrows, &c. The company intimate that they will make nothing in this line but the best.

H. W. JOHNS-MANVILLE COMPANY, 100 William street, New York, are sending out catalogues relating to Asbestos, Hair Insulator, Asbestos Roofings and Electrical Supplies.

THE AUBURN REDUCTION & SMELTING FURNACE COMPANY, Auburn, N. Y., have organized for the manufacture of Furnaces for smelting copper and other easily fused ores, under patents of Henry E. Vosburgh. The company will also operate a Brass foundry and mills for rolling Sheet Brass. The officers are Amasa J. Parker, president; Hon. A. P. Rich, vice-president; Alfred Fosgate, secretary; F. E. Parker, treasurer, and Henry E. Vosburgh, superintendent.

THE recent fire in the plant of the Charles Parker Company, Meriden, Conn., was confined to one of their small Brass foundries and did not inflict serious damage. Rebuilding is already under way.

ARTISTIC WOOD MANTELS, with Grates and Tiles in a wide variety, form the subject matter of a new catalogue issued by Edwin A. Jackson & Bro., 50 Beckman street, New York City. The catalogue contains some especially fine half-tone engravings, which display to the best advantage the handsome designs of Mantels that the company are now offering suitable for all classes of buildings. The concern are also manufacturers of a great variety of Grates, Andirons, Screens, &c., as well as a handsome line of Tiling for use in connection with their Mantels and Fire Places. The company's goods are provided with the Jackson Patent Ventilating Grate.

THE plant which the Thomas Devlin Mfg. Company, Philadelphia, Pa., are to erect at Burlington, N. J., will at first consist of a foundry building of about 38,000 square feet of floor space, core making building of about 8000 square feet of floor space, and annealing room, boiler and pump room of about 18,000 square feet of floor space. It is intended, however, to erect additional buildings next spring. The site contains 50 acres, with 2000 feet frontage on the Delaware River, and extends back to the Pennsylvania Railroad.

THE GRISWOLD MFG. COMPANY, Erie, Pa., recently purchased 6½ acres of land with two railway connections, on which they have erected a brick building, 230 x 50 feet, four floors, with basement, also separate brick buildings for japanning and tinning castings, &c. They are now removing all the finishing departments into these buildings, which will give them greatly increased capacity for turning out House Furnishing Goods, Hollow Ware and Gas Stoves. They will continue to run

their foundry in the old plant until next spring, when they will build a new foundry and the balance of the buildings necessary at the old plant.

THE WABASH SCREEN DOOR COMPANY, Chicago and Minneapolis, manufacturers of Screen Doors, Screen Windows and Stove Boards, are erecting a factory and warehouse at Minneapolis. The plant will comprise two brick buildings of modern mill construction, each building being 300 x 80 feet.

THE ENERGY ELEVATOR COMPANY, Philadelphia, Pa., are distributing an illustrated catalogue and price-list of their Hand Elevators and Dumb Waiters. The company confine themselves exclusively to the manufacture of these goods, including all attachments and appliances for the same.

A subscriber advises us that he has bound volumes of *The Metal Worker* for the years 1881 and 1889 inclusive, which he is willing to dispose of. If any of our readers are interested a letter of inquiry addressed to the Chicago office of *The Metal Worker*, 1205 Fisher Building, Chicago, will receive attention.

CONTENTS.

Editorials—	PAGE.
Pig Iron Production Reduced	37
Acetylene and Insurance.	37
Undesirable Immigration.....	37
Are You Ready ?.....	37
World's Fair Power Plant at St. Louis.	38
Electricity for Cultivation of Plants.....	38
Again the Stove Captain.....	39
The Pennsylvania Stove Trade.....	39
Mott's Ranges and Furnaces.....	39
Combination Gas or Vapor Valve. Illustrated.....	40
St. Clair Stoves and Ranges	40
Reineke-Wilson Company.....	41
The Dayton Adjustable Stove Pipe Thimble. Illustrated..	41
Odd Plates	41
Nebraska Retail Hardware Dealers' Association.....	42
Cash Prizes to Employees.....	43
The Archer Steel Wheelbarrow. Illustrated	43
The Degge Air Diffuser. Illustrated.....	44
Pieced and Stamped Tinware.....	44
Stove and Hardware Dealers.....	44
Insurance as Related to the Acetylene Generator Manufacturer....	45
A Vacuum Heating System	45
Death of Joseph Bond. Portrait	46
International Sanitary Congress.....	47
A New Supply Plant	47
Radiators.	47
Lawler's Steam, Water and Gas Specialties.....	47
The International Acetylene Association.....	48
The Allen Automatic Air Valve. Illustrated	50
A Workshop Washstand Design. Illustrated.....	50
The Tobey Water Heater.	50
Acetylene Possibilities at the Louisiana Purchase Exposition.....	51
Acetylene Wrinkles.....	52
New York City Notes.....	52
Enameled Iron Bathtubs.....	52
Heating and Plumbing Notes.....	52
New Firms and Changes.....	54
The Muskingum Valley Steel Company	55
The Youngstown Iron Sheet & Tube Company	55
A New Solder.	55
Bell's Patent Roller Flange Seamer. Illustrated.....	55
Patterns for Flaring Measure with Lip. Illustrated.....	56
Standard Tin Plate Company.....	57
Lion Brand Soldering Salts.....	57
The Valve-Light Ventilator. Illustrated.....	57
Follansbee Brothers Company.....	57
Some Meurer Goods.....	58
An Improvement in Laying Shingles.....	58
Flashings.....	58
The Letter Box—	
Heating Main Should Rise. Illustrated.....	59
Pattern for a "Head" to Fill the End of a Cornice Cut Off Obliquely. Illustrated.....	60
Patterns for a Chimney Top.....	60
Rusting of Galvanized Iron Roof.....	60
Who Makes the New Model Bench Drill ?.....	60
Trade Report—	
Market Summary.....	61
Metal Market.....	61
The Pig Iron Market.....	62
Chicago Report.....	62
The Hardware Trade.....	63
Notes on Prices.....	63
Trade Notes.....	63
Metal and Miscellaneous Prices.....	65
Labor Exchange—	
Help and Situations Wanted.....	69

ROOFING SUPPLIES, METALS, TIN PLATES, &c.

REVISED AUGUST 14, 1902.

Aluminum—

No. 1 Aluminum (guaranteed over 99% Pure), in ingots for remelting.	37¢
Small lots.	35¢
Aluminum Sheet, B. & S. gauge.	
In lots of 50 lbs or more.	
Wider than.....	14-in 24-in 30-in
And including.....	14-in 24-in 30-in
Nos. 13 to 19.....	\$0.42 \$0.44 \$0.47
" 20.....	.44
" 21 to 23.....	.46
" 24.....	.48
" 25.....	.47
" 26.....	.48
" 27.....	.48
" 28.....	.49
" 29.....	.50
" 30.....	.50

Note.—Lots of less than 50 lbs 5¢ per lb extra.

Antimony—

Cookson.....	10 1/4 @ 10 1/4¢
Hallett's.....	8 1/2 @ 8 1/2¢
U.S.....	8 1/2 @ 8 1/2¢

Brass, Roll and Sheet..... 30%

Conductors—

Corrugated.	
Round or Square.—	
Galvanized 1/2 or more, N's'd.....	75%
Not Nested.....	70 & 12 1/2%
Plain Round, 1/2 or more.	
Nested.....	75%
Galvanized, Plain Round, Not Nested.	70 & 12 1/2%

Spiral Lock Seam Pipe—

Galvanized.....	60 @ 60 & 10%
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Spiral Riveted.

Galvanized..... 40%

See also Elbows and Shoes; Eave Trough Miters; Strainers, Conductor.

Conductor Strainers—

See Strainers, Conductor

Copper—

Lake Ingot.....	13 @ 13 1/4¢
Casting.....	12 1/2 @ 12 1/2¢
Sheet and Bolt.....	18¢ per lb basis
Cold Rolled Sheets.....	19¢ per lb basis
Cold Rolled and Polished Sheets.....	20¢ basis
Planished Sheets.....	21¢ basis
Bottoms, Pits and Flats.....	22¢ basis

Eave Trough Galvanized

Territory	L. C. L.
Eastern.....	80%
Central.....	75 & 17 1/2%
Southern.....	75 & 7 1/2%
S. Western.....	75 & 5%
Terms, 2% for cash.	

Eave Trough Miters—

Lap or Slip Joint..... 1st, 25%

Elbows—Plain Adjustable—

Eastern List.

Tin..... 30%

Galvanized..... 30%

Perfect Elbows..... 40%

Stove Pipe—

Four-Piece

No. 1.....	4 1/4 @ .80
No. 2.....	4 1/2 @ .85
No. 3.....	4 3/4 @ .90
No. 4.....	5 @ 1.00
No. 5.....	5 1/4 @ 1.05

Elbows and Shoes—

Galvanized..... 80%

Gasoline—

See Petroleum Products.

Iron, Sheet—Black.

One Pass, C. R.	R. G.
Soft Steel.	Cleaned.
Nos. 14 to 16.....	3.30
Nos. 18 to 21.....	3.40
Nos. 22 to 24.....	3.50
Nos. 25 and 26.....	3.60
No. 27.....	3.70
No. 28.....	3.80

Russia, Planished, &c.

Genuine Russia, accord-	11 @ 14¢
ing to assortment.....	8 @ 10 1/2¢
Do. Stained.....	6 @ 10 1/2¢
Patent Planished, W D A, 11¢; B, 10¢ net	

Galvanized.

Nos. 14 and 16.....	3.45 @ 3.50¢
Nos. 18 and 20.....	3.70 @ 3.80¢
Nos. 22 and 24.....	4.00 @ 4.10¢
No. 26.....	4.25 @ 4.40¢
No. 27.....	4.55 @ 4.70¢
No. 28.....	4.85 @ 5.00¢
No. 30.....	6.00 @ 6.20¢
No. 20 and lighter, 36 inches wide, 25¢ higher.	

Lead—

American Pig.....	4.45 @ 4 1/2¢
Bar.....	5 @ 5 1/2¢
Pipe.....	6 1/2¢ @ 2 1/2% off
Tin Lined Pipe.....	12 1/2¢ @ 20% off
Sheet Lead.....	7 1/2¢ @ 20% off
Old Lead in exchange, 3 1/2¢ per lb.	

Mitres Eave Trough—

See Eave Trough Miters.

Nickel—

Per lb.....	55 @ 60¢
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Paints, Oils &c.—

Leads—

Lead, American White, in Oil:	
Lots of 500 lb or over.....	6 1/4 @ 6 1/4¢
Lots less than 500 lb.....	6 1/2 @ 6 1/2¢
Lead, White, in oil, 25 lb tin	
palls, add to keg price.....	1/2¢
Lead, White, in oil, 12 1/2 lb tin	
palls, add to keg price.....	1¢
Lead, White, in oil, 1 to 5 lb as-	
sorted tins, add to keg price.....	1 1/2¢
Lead, White, Dry in bbls.....	5 1/4 @ 6¢
Lead, Red, bbls., 1/2 bbls. and kegs:	
Lots 500 lb or over.....	6¢
Lots less than 500 lb.....	6 1/4¢

Oils—

Linseed, City, raw.....	68 @ 68 1/2¢
Linseed, City, boiled.....	70 @ 70 1/2¢
Linseed State and West'n, raw.....	67 @ 67 1/2¢

Spirits Turpentine—

In Southern bbls.....	47 1/2 @ 48¢
In machine bbls.....	48 @ 49 1/2¢

Putty—

In bulk.....	\$2.25
In bladders.....	2.25
In cans 12 lb to 25 lb.....	2.25
In cans 1 lb to 5 lb.....	3.25

Petroleum Products—

In Barrels (Barrel Included)

Stove Gasoline.....	10 1/4 @ 11¢
Kerosene.....	12 @ 13¢

Pipe, Block Tin—

Per lb.....	37¢
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Pipe Drain..... 40%

Pipe, Spiral—

See Conductors.

Registers—

List Sept. 2, 1901.

Black Japanned.....	70%
White Japanned.....	70%
Nickel Plated.....	70%
Bronze Finishes in Imitation of Gold.	
Silver, Copper or Bronze.....	70%
Electroplated in Brass, Bronze or	
Copper.....	70%
White Porcelain.....	80%
Solid Brass and Bronze Metal.....	50%

Roofing Material—

1 Ply Tarred Paper, 1/2 ton.....	\$31.00 @ 32.00
2 Ply Tarred Paper, 1/2 roll, 108 sq. ft.	55 @ 60¢
3 Ply Tarred Paper, 1/2 roll, 108 sq. ft.	80 @ 85¢
Slater's Felt.....	1 ton, \$35.00 @ 36.00
Roofing Pitch.....	1 ton, \$2.50

Rosin—

Common and Good—Strainer 1.	
Rosin, C. & D.....	1.57 1/2 @ \$1.60
Rosin, E. & F.....	1.65 @ 1.72 1/2
Rosin, G. & H.....	1.75 @ 1.90
Rosin, I. & K.....	2.35 @ 3.00
Rosin, M. & N.....	3.35 @ 3.70

Shoes and Elbows—

See Elbows and Shoes.

Slate Roofing—

f. o. b. cars, Quarry Station.

Pennsylvania:	According to size.
Best Bangor, 1/2 sqr.....	\$3.75 @ \$6.00
No. 1 Bangor Ribbon, 1/2 sqr.....	3.50 @ 3.75
Pen Argyle, 1/2 sqr.....	3.50 @ 4.50
Peach Bottom, 1/2 sqr.....	5.25 @ 6.35
No. 1 Chapman, 1/2 sqr.....	3.75 @ 4.75
No. 1 Penna. Black, 1/2 sqr.....	3.15 @ 4.15
Unfading Washington Ban-	
gor, 1/2 sqr.....	3.00 @ 4.50
Vermont:	
No. 1 Sea Green, 1/2 sqr.....	\$2.25 @ \$3.50
Purple, 1/2 sqr.....	4.50 @ 5.00
Unfading Green, 1/2 sqr.....	4.25 @ 5.25
Red, 1/2 sqr.....	7.00 @ 11.00

Maine:

Brownville, Unfading Black.	
No. 1, 1/2 sqr.....	\$5.25 @ 7.50

Solder—

1/2 lb guaranteed..... 19 1/4 @ 19 1/4¢

No. 1..... 14 1/4 @ 18 1/4¢

Prices of Solder indicated by private brands vary according to composition.

Soldering Fluids—

Per Pound.

Concentrated Flux.....	4c
Smaller Quantities.....	5c

Eureka Flux:

Triple Strength.....	3c
Extra Concentrated.....	4 1/2¢
Crystal.....	7c
Gedney's Fluid.....	2c
Lennox Fluid.....	2c
Perfection Flux.....	3c
Yager's Salts, 1 lb. bottles.....	each, 50¢
1 lb. bottles, per lb., 45¢	

Soldering Coppers—

Per lb.....	22 @ 24¢
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Spelter—

Western Spelter.....	.6 @ 6 1/2¢
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Spiral Pipe—

See Conductors.

Stove Pipe Elbows—

See Elbows, Stove Pipe.

Stove Trucks—

See Trucks, Stove.

Strainers, Conductor—

Galvanized.....	50%
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Tin Pigs and Bars—

Banca, pigs, 1/2 lb.....	29 @ 29 1/2¢
Straits, pigs, 1/2 lb.....	29 @ 29 1/2¢
Straits, in bars, 1/2 lb.....	30 @ 30 1/2¢

Tin Plates American

Charcoal Plates, Bright—

N. B.—The price of 20 x 28 sizes double the price of 14 x 20.

Calland Grade:

IC, 14 x 20.....	\$6.75
IX, 14 x 20.....	8.25
IXX, 14 x 20.....	9.50
IXXX, 14 x 20.....	10.75
IXXXX, 14 x 20.....	12.00

Melyn Grade:

IC, 14 x 20.....	6.25
IX, 14 x 20.....	7.75
IXX, 14 x 20.....	9.00
IXXX, 14 x 20.....	10.25
IXXXX, 14 x 20.....	11.50

Allaway Grade:

IC, 14 x 20.....	5.75
IX, 14 x 20.....	6.85
IXX, 14 x 20.....	7.95
IXXX, 14 x 20.....	9.05
IXXXX, 14 x 20.....	10.15

Coke Plates, Bright—

Bessemer

Steel, or

equal to J. C. 14 x 20..... \$4.90 @ 5.00

B. Grade,

full weight

IX, 14 x 20.....	\$6.00
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N. B.—The reduction per box on lighter Plates than IC, 14 x 20, is as follows:

100 lb.....	15¢
95 lb.....	20¢
90 lb.....	25¢
85 lb.....	30¢

Terne Plates—

N. B.—The following prices are for 14 x 20, the rate for 14 x 20 being half as much. IX is usually held at \$2 per box advance for 8 to 10 lb coating and \$2.50 to \$3 advance for 15 lb and upward.

About 40 lb coating.....	\$16.00 @ 16.50
About 30 lb coating.....	15.25 @ 15.75
About 20 lb coating.....	13.25 @ 13.75
About 15 lb coating.....	11.25 @ 11.75
About 8 lb coating.....	9.50 @ 10.00

Boiler Plates, American—

IXX, 14 x 28..(112 sheets).....	\$12.50
IXX, 14 x 28..(112 sheets).....	13.50
IXX, 14 x 31..(112 sheets).....	15.00

Troughs Eave—

See Eave Trough.

Trucks, Stove—

Improved Lock Frame, per doz..... \$15.00

Steel Lock Frame, per doz..... 18.00

Daisy Improved pattern, 1/2 doz..... 18.00

Tubes and Tubing—

Brazed Brass, List June 8, 1898..... 40%

Copper and Bronze, 3c per lb. list more than Brass.

Seamless Brass Tubes, net list Feb. 8, 1899

Tin..... 50%

Galvanized..... 50%

Fittings for do..... 40%

Zinc—

600 lb casks 1/2 lb..... 63¢

Per lb..... 7 1/4 @ 7 1/2¢

PLUMBERS' AND STEAM FITTERS' SUPPLIES.

Boilers, Galvanized—

Standard Boilers:

30 gal.....	72 1/2%
35 and 40 gal.....	70%
Other sizes up to 52 gal.....	65%
52 gal. and above.....	55 & 5%

Extra Heavy Boilers:

18 to 52 gal.....	60%
53 gal. and above.....	60 & 5%

Brass Work, Plumbers'—

List of December 7, 1898.

Compression:

Basin Cocks..... 80 & 10%

Bath Cocks and Double Bath Cocks.....

60 & 10%	
----------	--

Bibs..... 80 & 10%

Bibs, Flanged..... 80 & 10%

Fuller:

Bibs..... 70%

Basin Cocks, Nos. 1 to 4..... 70%

Bath Cocks, No. 4 1/2..... \$2.40 each net

Ground Key Work:

Finished Bibs..... 80%

Rough Bibs..... 60 & 5%

Rough Stop and Stop and Waste

Cocks..... 70 @ 70 & 5%

Rough Stop and Stop and Waste

Cocks, Patented..... 65 @ 65 & 5%

Miscellaneous—

Basin Clamps..... 60 @ 65%

Basin Plugs..... 60 @ 65%

Chain Stays..... 60 @ 5 & 70%

Iron Boiler Couplings:

Lead Pipe. Iron Pipe.

Plain Face, 1/2 set.....	\$0.95
Ground Face 1/2 set.....	\$1.05
Ground Face 1/2 set.....	\$1.10
Sink or Bath and Wash Tray Plugs.....	60 @ 65%
Soldering Nipples.....	70 & 5 @ 75%
Soldering Unions.....	70 & 5 @ 75%
Union Elbows, Hot Water Heating.....	75 @ 75 & 15%

Cocks, Valves &c.—

Cocks—

Brass—

Air and Radiator Air.....	75 @ 75 & 5%
Gas Meter and Union Meter.....	65 @ 70%
Steam.....	65 @ 70%

Iron—

All Iron.....	70 @ 70 & 10%
Iron with Brass Plugs.....	65 @ 70%

Valves—

Brass—

Check.....	65 @ 70%
Garden Hose.....	85 @ 10 @ 70%
Gate.....	65 @ 65 & 10%
Globe and Angle, hose outlet.....	45 @ 65 & 10%

ALPHABETICAL LIST OF ADVERTISERS.

Abner Acetylene Gas Co.... 33	Clason, Arch. Metal Works.. 72	Gummey, McFarland & Co... 75	Monash-Younger Co..... 33	Schwab, R. J. & Sons Co..... 21
Adee, Fred. & Co..... 35	Clayton & Lambert Mfg. Co.. 35	Gurney Heater Mfg. Co..... 19	Moncrief F'ce & Fdry. Co.... 25	Schwerdtle Stamp Co..... 70
Adler, H. Co..... 11	Coe, Jas. A. & Co..... 77	Harrington & King Perfo- rating Co..... 66	Montross Metal Shingle Co.. 74	Selleck, A. C..... 25
American Blower Co..... 23	Colebrook, W. H. Sons & Co.. 28	Hart & Cooley Co..... 27	Morgan & Co..... 27	Sheppard, Isaac A. & Co..... 1
American Galvanizing Wks.. 73	Colewell Lead Co..... 34	Hart & Crouse Co..... 13	Mott, J. L. Iron Works..... 18	Shields, W. H. & Co..... 31
American Radiator Co..... 18	Cooney & Geiger..... 72	Heartley Machine Variety Iron & Tool Works..... 74	Mneller, L. J. F'ce Co.. 19	Smith, H. B. Co..... 14
American Sheet Steel Co... 1&76	Cope, Geo. W..... 30	Heath, C. C. & Co..... 28	Mullins, W. H..... 80	Smith & Anthony Co..... 84
American Steam Gage & Valve Mfg. Co..... 1	Cortright Metal Roofing Co.. 74	Hellos-Upton Co..... 24	Munsell, E. & Co..... 29	Smith & Thayer Co..... 28
American Tin Plate Co..... 76	Crosby Steam Gage & Valve Co..... 1	Hessler, H. E. Co..... 31	National Enameling & Stamp- ing Co..... 36	Somerset Stove Fdry. Co.... 12
Anderson Coupling Co..... 34	Curtis & Curtis Co..... 34	Hoffman, Geo. W..... 30	National Pipe Bending Co... 10	Sommer's, John Son..... 1
Arcade Mfg. Co..... 27	Dangler Stove & Mfg. Co.... 8	Howes, S. M. Co..... 22, 28&29	New York Iron Roofing & Corrugating Co..... 73	Special Notices..... 70
Armstrong Mfg. Co..... 34	Danzer Metal Works..... 81	Howson & Howson..... 70	New York Trade School.... 70	Sperry, D. R. & Co..... 71
Art Modeling Works..... 74	Day Metallic Mfg. Co..... 35	Hubbell, Harvey..... 35	Niagara Machine & Tool Wks 81	Stamford Foundry Co..... 17
Asheville Mica Co..... 29	Dighton Furnace Co..... 21	Independent Register Co.... 25	Nickel Plate Stove Polish Co 28	Standard Lighting Co..... 10
Asphalt Ready Roofing Co.. 77	Dixon, Jos. Crucible Co..... 29	International Heater Co..... 3	Noppel Pump Co..... 35	Steel & Iron Aluminum Coat- ing Co..... 75
Auld & Conger Co..... 73	Double Truss Cornice Brake Co..... 80	Irwin, H. L..... 70	Norwall Mfg. Co..... 35	Stiles & Parker Press Co.... 82
Ayling Bros..... 29	Drake, W. H..... 25	Iwan Bros..... 72	O'Halloron & Jacobs..... 73	Stocking, E. B..... 70
Barstow Stove Co..... 84	Drake & Mills..... 71	Janney, Steinmetz & Co..... 74	Ohio Mica Co..... 29	Stolz, Frank D..... 23
Beckwith, P. D., Est. of.... 2	Dronve, G. Co..... 81	Jenkins Bros..... 1	Ohl, Geo. A. & Co..... 82	Stowell Mfg. Co..... 80
Berger Bros. Co..... 74	Edwards, J. H..... 12	Johnson, E. J. & Co..... 73	Osborn, J. M. & L. A..... 80	Swett, A. L. Iron Works.... 23
Berger Mfg. Co..... 78	Edwards Mfg. Co..... 78	Keene, Geo. C. & Co..... 83	Ostrander, W. R. & Co..... 71	Taylor Co., N. & G..... 84
Bergstrom Bros. & Co..... 17	Ellers, J. H. & Co..... 79	Kelsey Heating Co..... 36	Patric Furnace Co..... 19	Thatcher Furnace Co..... 22
Bertsch & Co..... 82	Energy Elevator Co..... 72	Kemp, C. M. Mfg. Co..... 34	Peck-Hammond Co..... 12	Troy Nickel Works..... 30
Bibb, B. C. Stove Co..... 11	Excelsior Steel Furnace Co.. 26	Kewanee Boiler Co..... 16	Peck, Stow & Wilcox Co.... 81	Tucker & Dorsey Mfg. Co... 27
Bickelhaupt, G. Skylight Wks 74	Faikenan-Sinclair Mch. Co. 81	Kieley & Mueller..... 1	Peck-Williamson Co..... 16	U. S. Register Co., Ltd..... 10
Bliss, E. W. Co..... 82	Fenn, Geo. E..... 72	Kline, J. M..... 33	Perkins, J. L. & Co..... 72	Utica Heater Co..... 20
Blodgett, G. S. Co..... 23	Floyd, Wells & Co..... 24	Koven, L. O. & Bro..... 33	Pierce, Butler & Pierce Mfg. Co..... 23	Valentine, M. D. & Bro. Co.. 31
Born Steel Range Co..... 20	Follansbee Bros. Co..... 1	Kramer Bros..... 29	Pittsburgh Stove & Range Co 6	Van John, Range Co..... 13
Boynton Furnace Co..... 16	Forest City Fdry. & Mfg. Co. 23	Lawless, John H..... 35	Pocock, Oliver..... 83	Vedder Pattern Works..... 30
Brand Stove Co..... 11	Forest City Paint & Varnish Co..... 80	Lawrence-Letts Elbow Co... 30	Portsmouth Stove and Range Co..... 6	Vogel, William & Bros..... 71
Bray, J. & Co..... 73	Foster, F. W. Mfg. Co..... 35	Lennox Manufacturing Co.. 27	Presbrey Stove Lining Co... 31	Walker & Pratt Mfg. Co... 21
Bridgeport Crucible Co..... 31	Frاند, Martin J. & Co..... 80	McClure & Co..... 84	Richmond Co..... 15	Walworth Mfg. Co..... 1
Brlen Heater Co..... 23	Friedley & Voshardt..... 78	McSherry, Chas..... 81	Ringen Stove Co..... 7	Washburne, E. G. & Co.. 72&83
Bruce & Cook..... 77&84	Frink, L. P..... 84	Magee Furnace Co..... 1	Robertson Mfg. Co..... 83	Waterbury Brass Co..... 1
Buffalo Forge Co..... 72	Front Rank Steel Furnace Co 17	March-Brownback Stove Co. 24	Robinson Furnace Co..... 22	Weir Stove Co..... 84
Burton, W. J. & Co..... 35	Fuller & Warren Co..... 1	Marcy Stove Repair Co... 31	Robinson, J. M. & Co..... 83	Weiss, H. & Co..... 80
Callahan, Geo. & Co..... 35	Galesburg Cornice Works... 79	Marston, I. G. & Co..... 33	Rochester Radiator Co..... 26	Wheeler, W. A..... 83
Canton Steel Roofing Co.... 79	Galt, John & Sons..... 73	Matthews, H. A. Mfg. Co... 26	Rutland Fire Clay Co..... 30	Wheeler, E. S. & Co..... 32
Carroll, J. B..... 12	Genuine Bangor Slate Co... 73	Merchaunt & Co..... 73	Salem Nail Co..... 72	White, Warner Co..... 25
Castle, Wilmot & Co..... 27	Glessel, Henry & Co..... 33	Metropolis Sheet Metals & Stove Repairing Co..... 10	Saunders, D. Sons..... 34	Willard, Wm. G..... 10
Champion Steel Range Co... 12	Globe Iron Rfg. & Corrugat- ing Co..... 74	Menrer Bros. Co..... 75	Schill Bros. Co..... 11	Williams Stove Lining Co... 29
Chattanooga Steel Roofing Co..... 81	Globe Ventilator Co..... 72	Meyer, F. & Bro. Co..... 18	Schneider & Trenkamp Co... 8	Wister, L. & R. & Co..... 84
Chicago Furnace Supply Co. 25	Gobelle Pattern Co..... 29	Michigan Stove Co..... 4&5	Schratwiesers Metal Lath Works..... 72	Wolff, L. Mfg. Co..... 34
Cincinnati Stamping Co.... 74	Gordon, W. J..... 83	Millar, Chas. & Son Co.... 84		Wood, Alan Co..... 77
Clark, Geo. M. & Co..... 9	Gorton & Lidgerwood Co.... 1	Milwaukee Pattern Works.. 12		Wood & Bishop Co..... 25
Clark, Henry N. Co..... 26	Gray, G. L..... 70	Miner & Peck Mfg. Co..... 29		Young, Jos. H..... 33
Clark Novelty Co..... 71				
Clark, Quilen & Morse..... 79				

PERFORATED METALS
OF EVERY DESCRIPTION
FOR SCREENS OF ALL KINDS
THE HARRINGTON & KING PERFORATING CO.
217 NORTH UNION STREET.
CHICAGO, ILL., U. S. A.

STEEL, IRON, COPPER, ZINC, BRASS, TIN,
AND ALL OTHER METALS
PERFORATED AS REQUIRED
FOR
GRAIN CLEANING AND MINING MACHINERY,
WOOLLEN, COTTON, PAPER AND PULP MILLS,
RICE, FLOUR AND COTTON SEED OIL MILLS,
SUGAR AND MALT HOUSES, DISTILLERIES, FIL-
TER PRESSES, STONE, COAL AND ORE SCREENS,
BRICK AND TILE WORKS, FILTERS,
SPARK ARRESTERS, GAS AND WATER WORKS,
OIL, GAS AND VAPOR STOVES,
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Muer & Peck Mfg. Co., New Haven, Ct.

SEE ALPHABETICAL INDEX PAGE 66.

THE METAL WORKER.

With which is Incorporated The Stove and Tin Trade Journal, The Sheet Metal Builder, and Metal.

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First-class TINSMITH who can do all kinds of jobbing and furnace work; steady job, work all the year; state wages wanted, also references. "Hardware," Box 271, Gloversville, N. Y. Aug. 16

A good, all around TINNER for inside and outside work; hot air furnace work, &c.; must be sober and reliable; steady work for the right man. E. M. Shoupe, Fremont, Ohio. Aug. 16

A first-class TINNER, SLATER and FURNACEMAN; a regular job to the right man; state wages wanted and experience. A. J. Kennard, Roanoke, Va. Aug. 16

SLATERS, TINNERS and CORNICE MAKERS; reliable men. Apply to H. C. Hines & Co., Detroit, Mich. Aug. 16

At once, an experienced man as ASSISTANT MANAGER, BOOKKEEPER and BUYER in a manufactory of gasoline and blue-flame stoves, &c.; give full information concerning age, experience, references and salary. Box 82, care *The Metal Worker*, 1205 Fisher Building, Chicago, Ill. Aug. 16

A competent FOREMAN; one who is thoroughly posted in cornice, slate and steel ceiling work; must be a sober man; a married man preferred; good salary. John Boland, proprietor New Globe Cornice Works, 226 West Main street, Decatur, Ill. Aug. 16

At once, by an all around man at plumbing, tinning and heating; all correspondence promptly answered. Box 91, Winchendon, Mass. Aug. 16

A good TINNER for inside work. Carnahan Stamping & Enameling Company, Canton, Ohio. Aug. 16

TINSMITH'S HELPER. A. A. Hislop, 2 Seigrest street, Newark, Wayne County, N. Y. Aug. 16

A man who knows enough about the tinner's trade to make sheet iron stoves. E. B. Colby & Co., Hoboken avenue, Jersey City, N. J. Aug. 16

One or two good TINNERS; must know slating, too; none but sober men need apply. W. N. Johnson, 533 Main street, Richmond, Ind. Aug. 16

Three TINNERS; men with some knowledge of plumbing and heating preferred; state wages expected. Spratt & Corcoran, 48 Court street, Watertown, N. Y. Aug. 16

Two men, one TINNER, one PLUMBER; would prefer all around men; wages, \$2.75 per day for competent men; eight hours' work; steady. B. G. Leeper, 374 Main street, Ansonia, Conn. Aug. 16

At once, a good cornice and skylight maker as FOREMAN who is a good cutter; must be sober and reliable and know how to work men to advantage, including roofing line if necessary; wages \$3 per day, eight hours; steady job all year to right man. "Employer," Box 573, Meridian, Miss. Aug. 16

Good TINNER and CORNICE WORKER; 22½ cents per hour and steady work to right man. Chas. F. Hauck & Co., 35 West Main street, Springfield, Ohio. Aug. 16

A1 PLUMBER, STEAM and HOT WATER HEATING; one with some knowledge of roofing and tin work preferred; to such will be given steady work at fair wages; must be sober and reliable and give reference. Lock Box 83, Gowanda, N. Y. Aug. 16

One PLUMBER and STEAM FITTER; also JUNIOR PLUMBER and STEAM FITTER. Apply at once; state experience. Post Office Box 24, Fort Wayne, Ind. Aug. 16

A first-class TINNER; would like one that understands plumbing and steam fitting; good wages and steady work. Miller & Davis, De Smet, S. Dak. Aug. 16

A first-class TINSMITH with experience or cornice and furnace work; state experience; steady work the year around. Bruno Martin & Son, 814 Janes avenue, Saginaw, Mich. Aug. 16

Five or six PLUMBERS and STEAM FITTERS; 30 cents per hour for plumbers and 30 cents per hour and board for steam fitters; must work in nonunion shop. West Virginia Heating & Plumbing Company, Charleston, W. Va. Aug. 16

Two good CORNICE and SKYLIGHT WORKERS; state age, experience and wages expected. Apply at once to Callanan Bros., contractors, Keeseville, N. Y. Aug. 16

TINNER WANTED who can do plumbing. Jos. Guthrie & Son, Erie, Ill. Aug. 16

SALESMAN to sell mica as a side line; liberal commission and no samples. "Mica," care *The Metal Worker*, New York. Aug. 9

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Two first-class TRAVELING SALESMEN of good character, familiar with steam and hot water heating apparatus; state experience, age, &c. Gurney Heater Mfg. Company, Boston, Mass. Aug. 9

METAL STAMPER; one who has had experience in handling men and can get work out quickly. "Hustle," care *The Metal Worker*, New York. Aug. 9

To correspond with a man that understands enameling, baths, sinks, &c. "J. A. B.," Box 586, Amherst, Nova Scotia. Aug. 9

A bright young PLUMBER, graduate of Trade School, to work under instructions; or TINSMITH who can do plumbing and pipe work; reference required on account of its being a position to take charge of store, &c. A. T. Skillman, Hightstown, N. J. Aug. 9

A first-class ESTIMATOR on cornices, steel ceiling and light iron work, to take charge of plant. Southern Metal Company, Orangeburg, S. C. Aug. 9

First-class TINSMITH and FURNACEMAN; one experienced in blow piping preferred; must be a strictly first-class hand and must thoroughly understand his business; good wages and steady job. "Virginia," care *The Metal Worker*, New York. Aug. 9

A good PLUMBER who understands tin work; steady position. G. L. Swift & Sons, Marathon, N. Y. Aug. 9

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A good TINNER; steady work; must have had experience in general jobbing; references required. Reply by letter to F. Rhuling, care *The Metal Worker*, 1205 Fisher Building, Chicago, Ill. Aug. 9

At once, a good all around TINSMITH for inside and outside work. J. E. Doolittle, Ellicottville, N. Y. Aug. 9

A dozen to fifteen good MOLDERS. Danville Stove Company, Danville, Pa. Aug. 9

A steady, reliable FURNACEMAN and SHEET METAL WORKER; quick and first-class; must be temperate and reliable; state age, experience and references. "Heating," Nashua, N. H. Aug. 9

At once, a good, all around TINNER and PLUMBER; married man preferred; steady work every day in the year; must be sober and steady; wages, \$2.50 per day. Geo. W. Gibney, Pawling, N. Y. Aug. 9

A good TINNER, SLATER and FURNACEMAN; steady job. 207 Court street, Hamilton, Ohio. Aug. 9

TINSMITH; must be first-class furnace-man and thoroughly familiar with all branches of the business; steady job to good man; no other need apply; state wages and experience. Alex. Cameron, Southampton, L. I. Aug. 9

At once, first-class TINSMITH and FURNACEMAN; must be strictly temperate and reliable; steady job the year round to a good man; location near Albany, N. Y. "Tinsmith," care *The Metal Worker*, New York. Aug. 9

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By a New York licensed PLUMBER to run a jobbing shop; 12 years at plumbing, gas, steam and hot water fitting. "A. E. J.," 953 Second avenue, Brooklyn, N. Y. Aug. 16

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By PLUMBERS' HELPER, aged 19 years; have served three years at the trade; strictly sober. Arthur McElroy, 206 High avenue, Nyack, N. Y. Aug. 16

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By a first-class, practical STEAM FITTER; can estimate, solicit and lay out work. "Steam Fitter," 5 Manilla street, Rochester, N. Y. Aug. 16

By young man, aged 22 years, strictly temperate, to finish trade; four years at the tinning business; good at outside work; reasonable wages; willing to board with employer. "M.," care *The Metal Worker*, New York. Aug. 16

By practical TINSMITH; good at in and outside work. M. Marcuss, 57 Forsyth street, New York. Aug. 16

As FOREMAN or CUTTER, by a first-class cornice and skylight maker who is a good cutter and estimator and understands the cornice, skylight and roofing business in all its branches; would like job in New York City. "Foreman," care *The Metal Worker*, New York. Aug. 16

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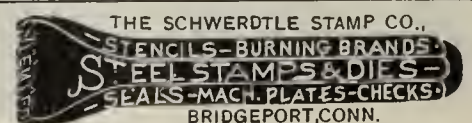
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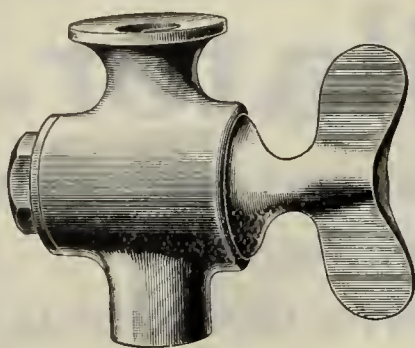
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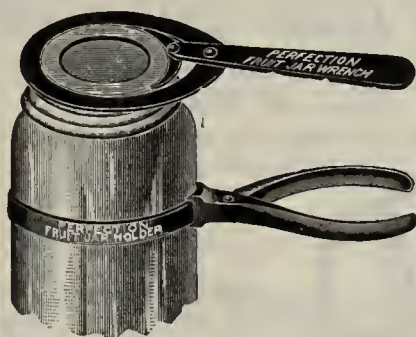
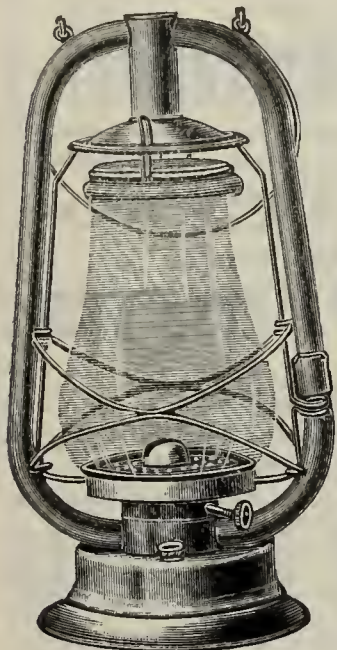
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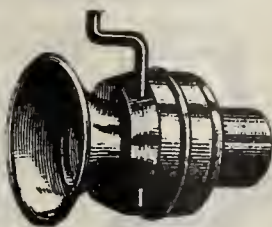
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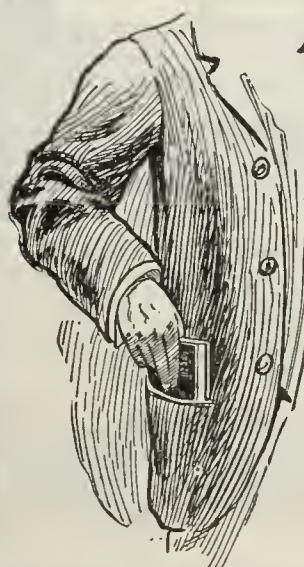
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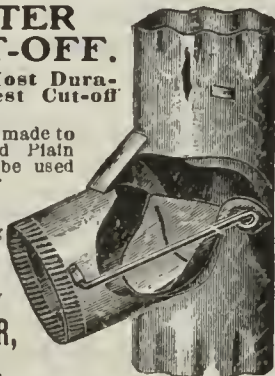
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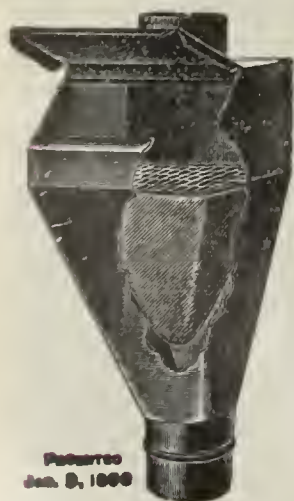
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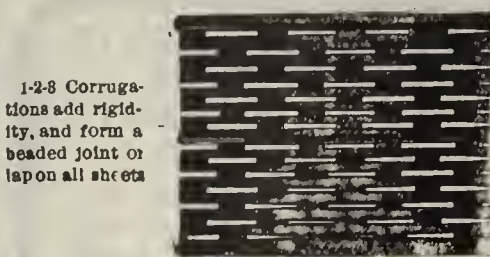
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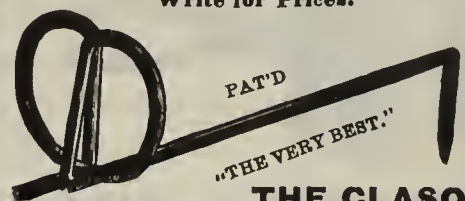


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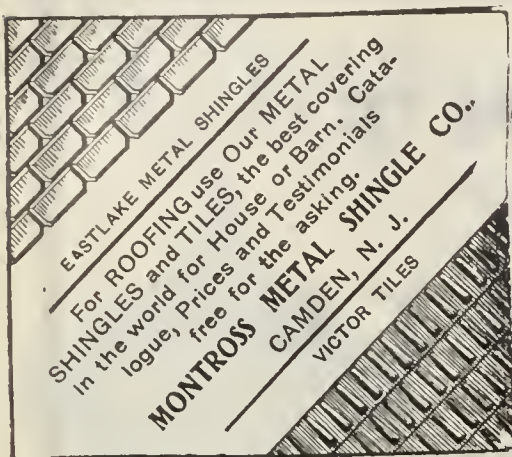
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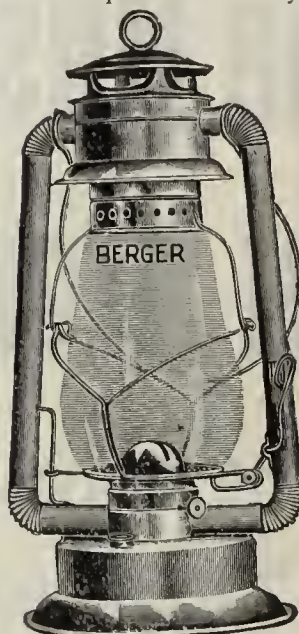
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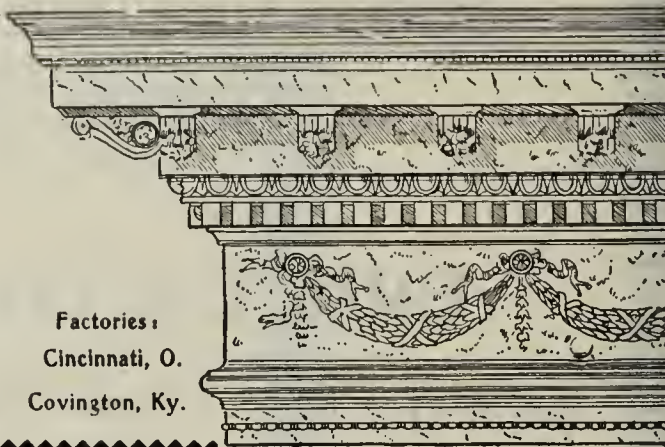
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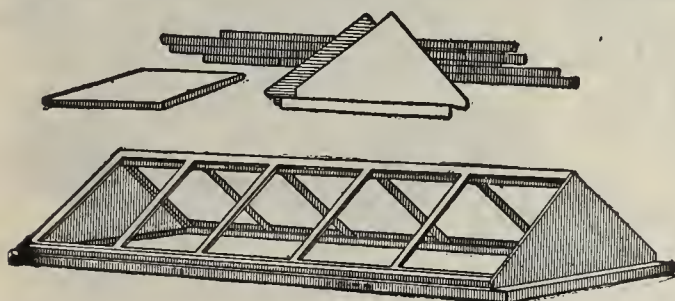


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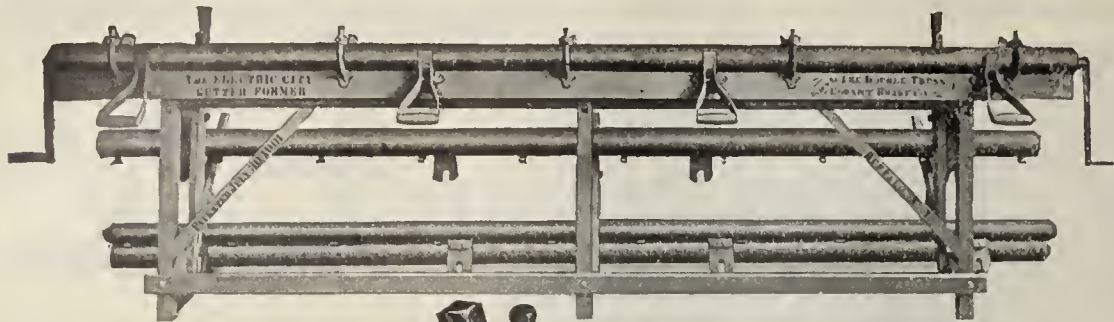
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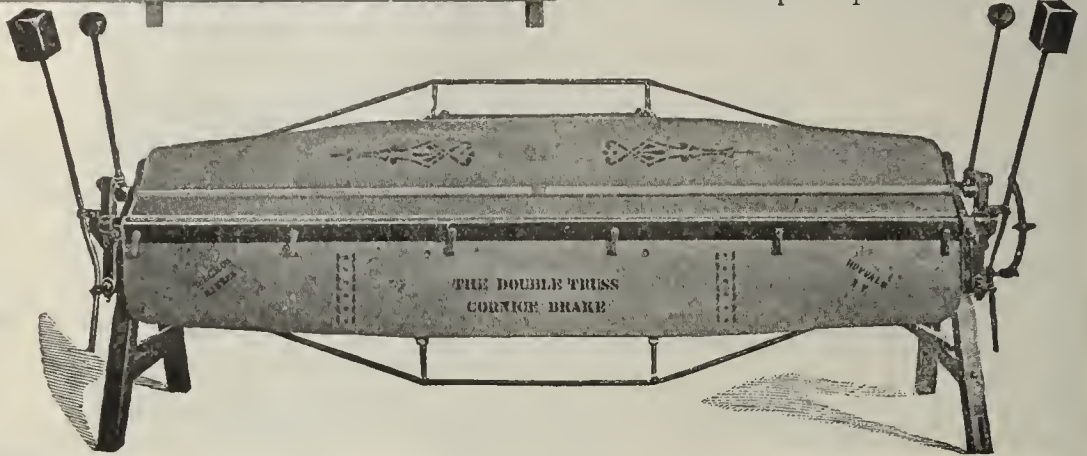


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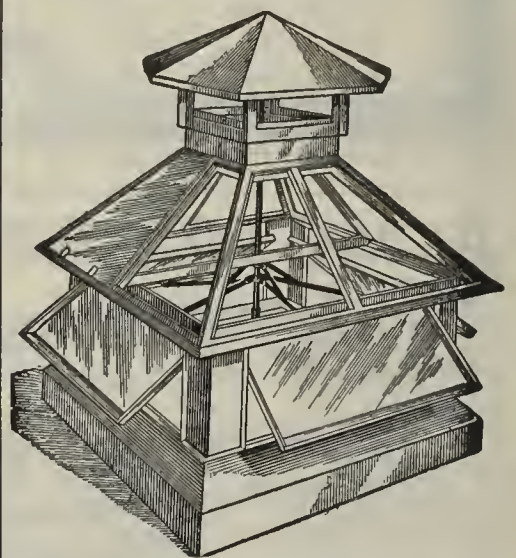
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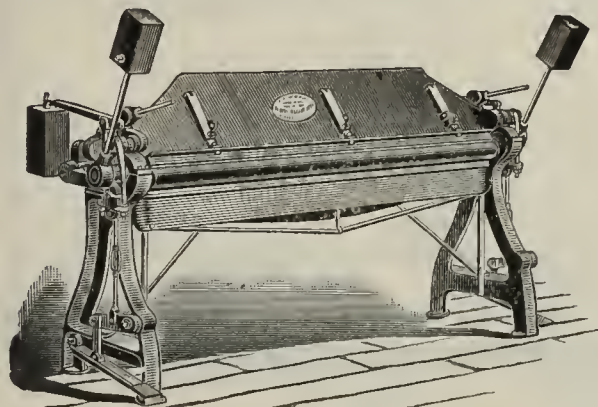
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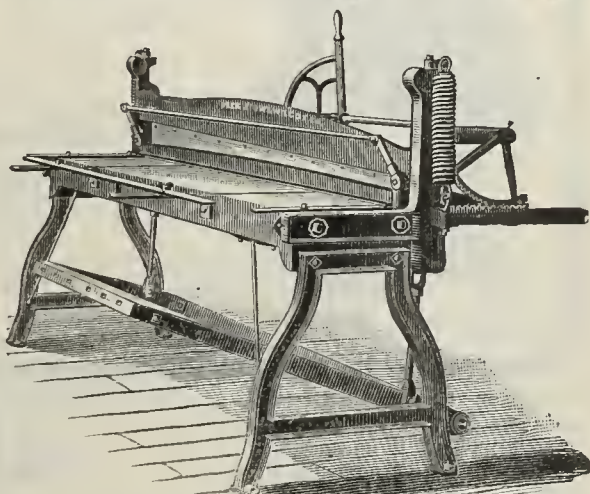
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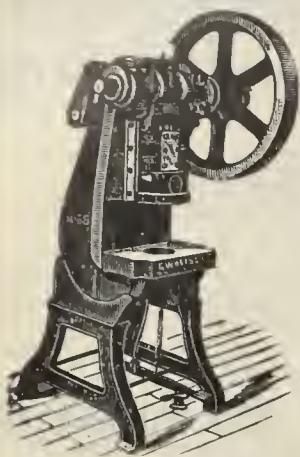
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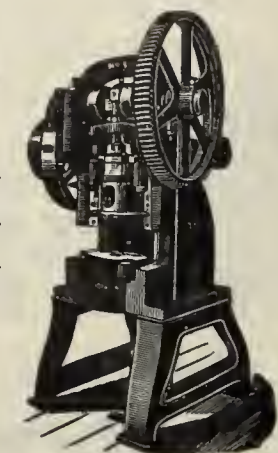
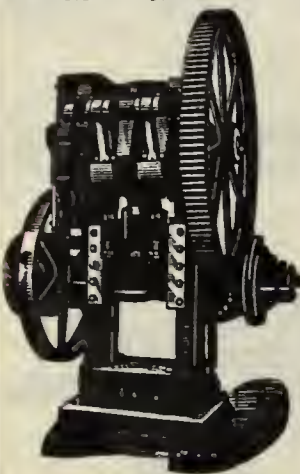
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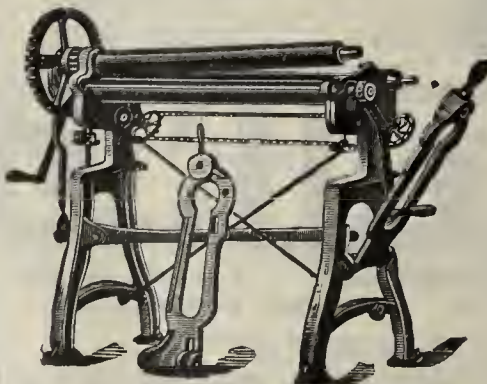
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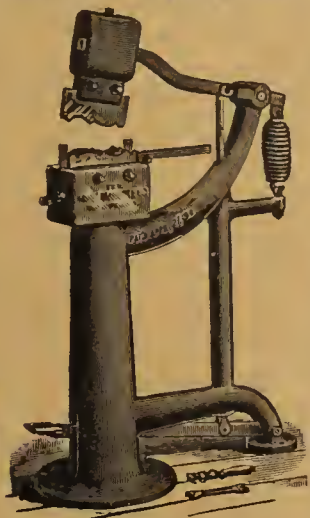
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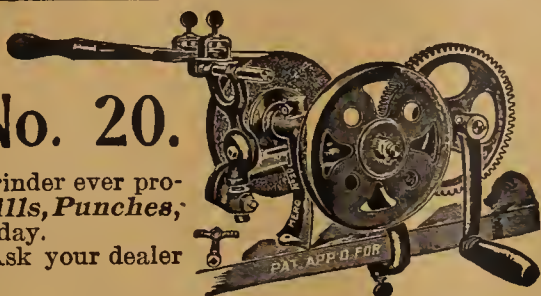
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VOL. LVIII.
 NUMBER 8.

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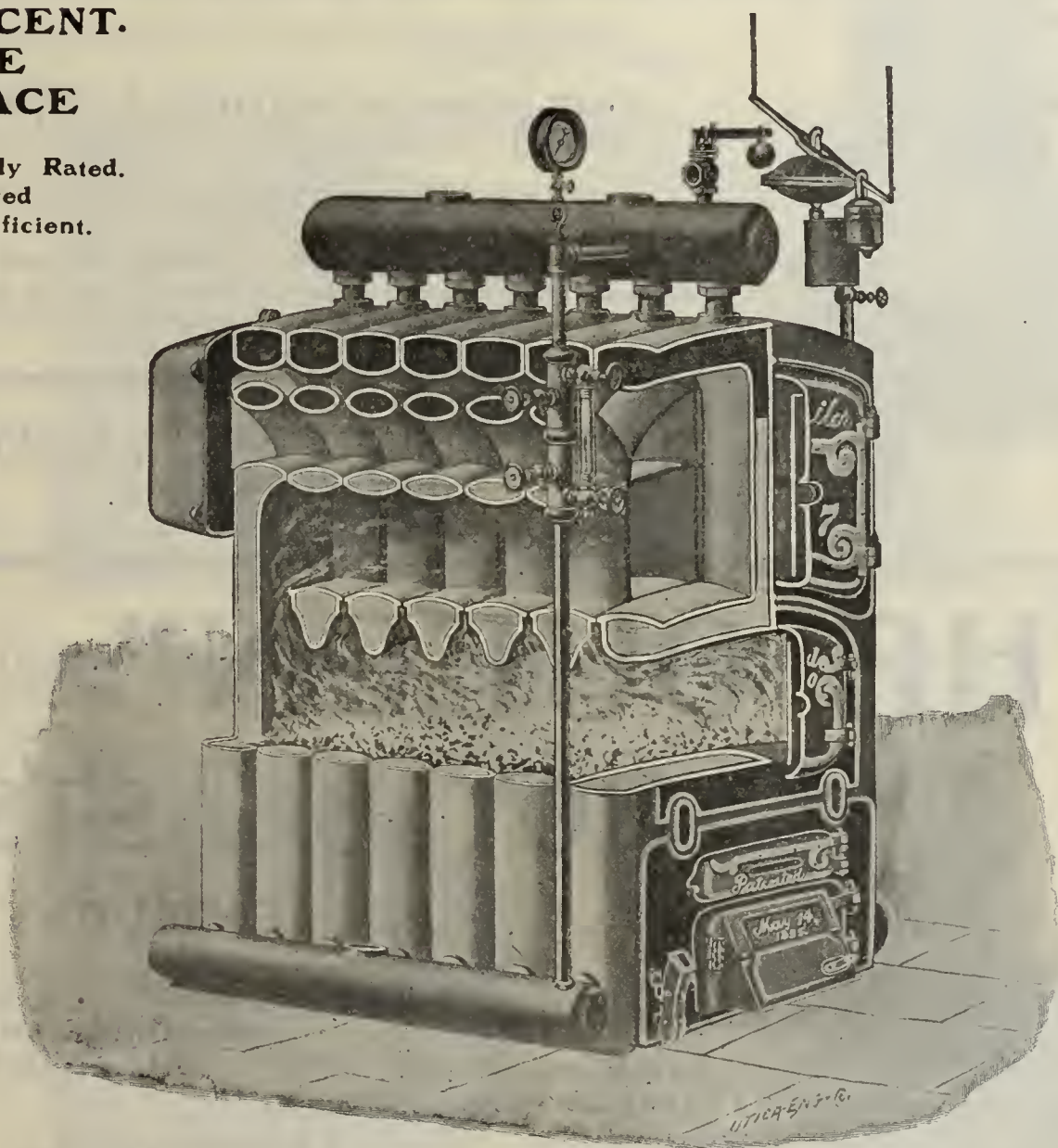
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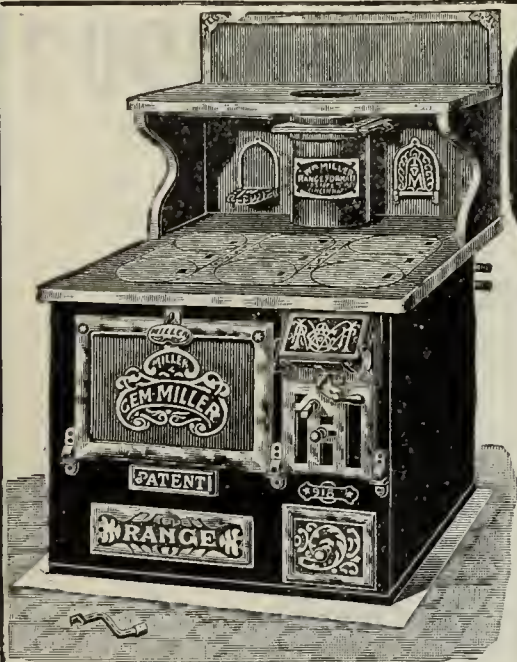


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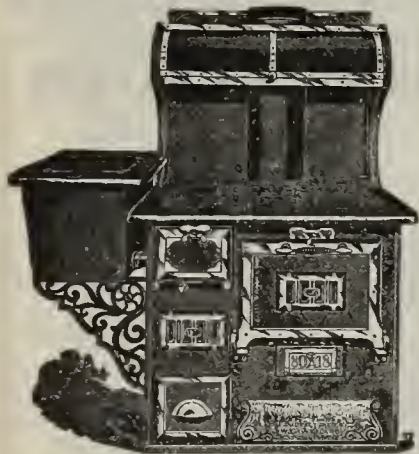
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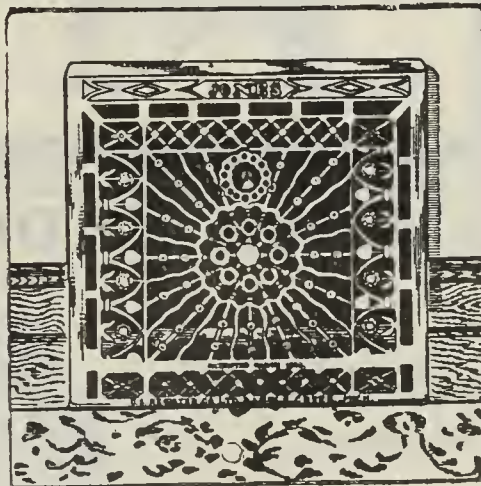
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Staudart Bros., Detroit, Mich.  
Geo. Worthington Co., Cleveland, O.  
Martin Fischer, Buffalo, N. Y.  
W. A. Sherman, Troy, N. Y.

Manufactured by

**THE UNITED STATES REG. CO., Ltd.,**  
BATTLE CREEK, MICH.





## Natural Gas is Cheaper Than Coal,

Providing You Use the Proper Appliances.

We are sending out Catalogue No. 36, showing over one hundred different designs of Gas Stoves and Ranges that are economical and efficient.

**H. ADLER COMPANY,**

Manufacturers of Acme Gas Stoves and Ranges,  
**PITTSBURG, PA.**

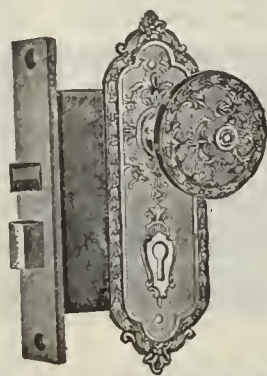
## THE TAYLOR & BOGGIS FOUNDRY CO.,

MANUFACTURERS OF

Light Gray Iron Castings, Builders' Hardware.

Dampers, Damper Clips, Oil and Gas Stoves, Furnace  
Lamps, Molasses Gates, Letter Boxes,  
Hardware Specialties.

**CLEVELAND, O.**

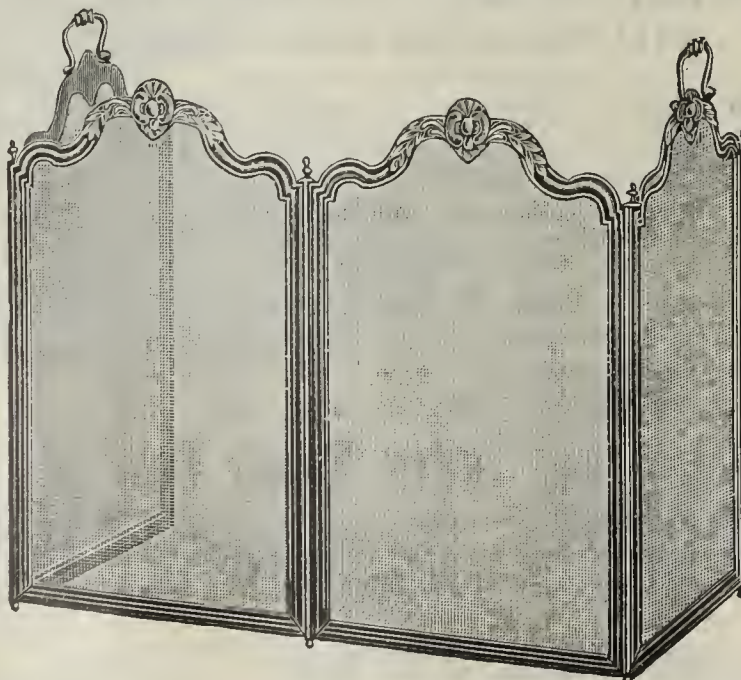


## FRENCH FOLDING SCREENS FOR FIRE PLACES

We are the only manufacturers of this line in the United States.

*Send for Our Prices  
Before Importing.*

Our screens are heavier, smoother finished, and generally better than the imported article.



Finished in pure brass, gilt, lacquer and Berlin black.

Screens made in the following heights: 18, 20, 26 and 30 inches.

A large variety of styles.

Send for catalogue of  
**Fire Place Goods**  
made of brass, wrought iron  
and cast iron.

**The S. M. HOWES CO.,** Manufacturers, 42-44-46 Union Street, BOSTON, MASS.



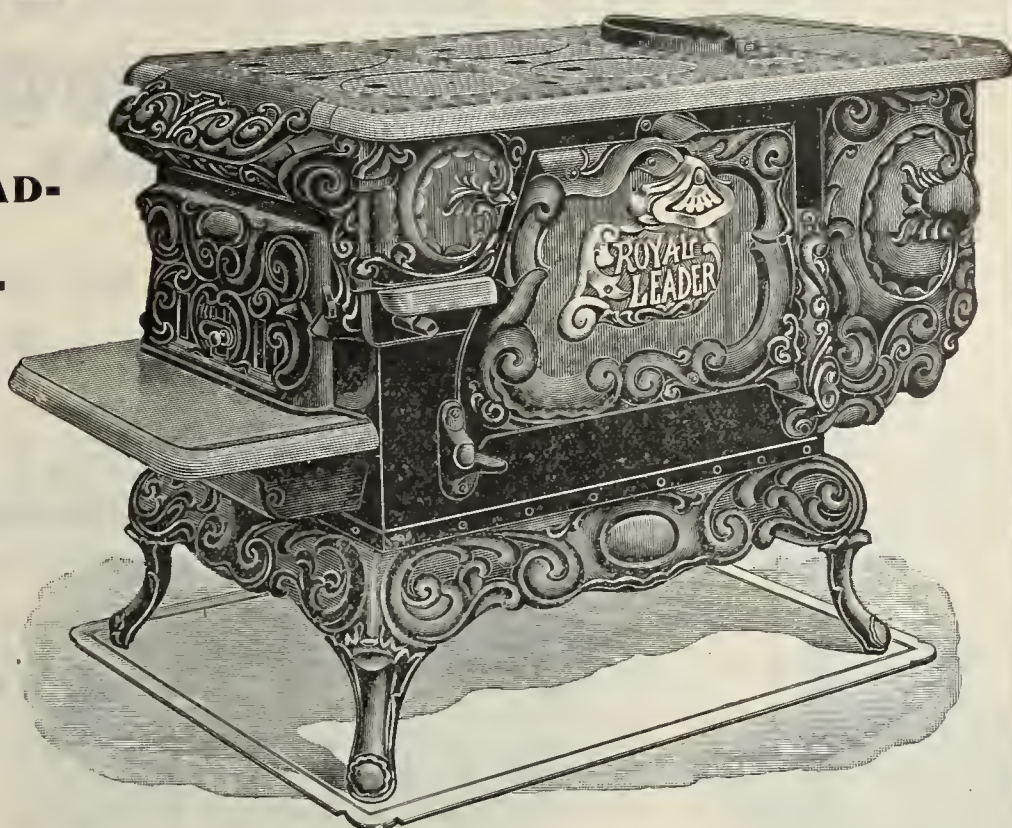
# ROYAL LEADER.

**IT DOESN'T  
REQUIRE  
A TRUMPETER  
TO HERALD THE AD-  
VANCE OF OUR  
ROYAL LEADER.**

The 100 per cent. increase in our business is ample evidence of the fact that they have been crowned with success.

They are made with and without reservoirs, in either range or cook stove form, with four hole tops.

Write for supplemental catalog and price list.



**THE A. T. NYE & SON CO , Marietta, Ohio.**

## A LASTING SUCCESS REQUIRES MERIT!



Practical men cannot be fooled by extravagant claims regarding any furnace. No heating apparatus can do the impossible or overcome the laws of nature.

**Too much** is claimed for some furnaces, and boastful claims often prove to be a **boomerang**. We claim to make furnaces that are **all right**; that **do the work**; that **wear well**; that **are not extravagant coal consumers**; and that **make friends for us**. Our **customers** will **back us** in these claims.

Send for catalogue and prices.

## THE GRAFF FURNACE CO.,

Manufacturers,

208 Water Street, New York.



**THE H.B. SMITH CO.,**  
**WESTFIELD, MASS., U.S.A.**

Catalogue furnished only upon application to  
**Heating Contractors, Engineers and Architects**

92 Pages. Size 9 x 12 Inches.

**COTTAGE  
BOILERS.**

STEAM BOILERS (8 SIZES), 550 SQ. FT. RADIATION SUPPLIED.  
WATER BOILERS (8 SIZES), 900 SQ. FT. RADIATION SUPPLIED.

PACIFIC COAST AGENTS  
**HOLBROOK, MERRILL & STETSON,**  
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EUROPEAN AGENTS  
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BREMEN AND NEW YORK CITY.

SALESROOMS :

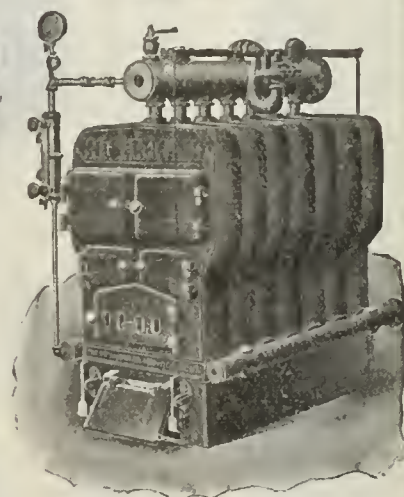
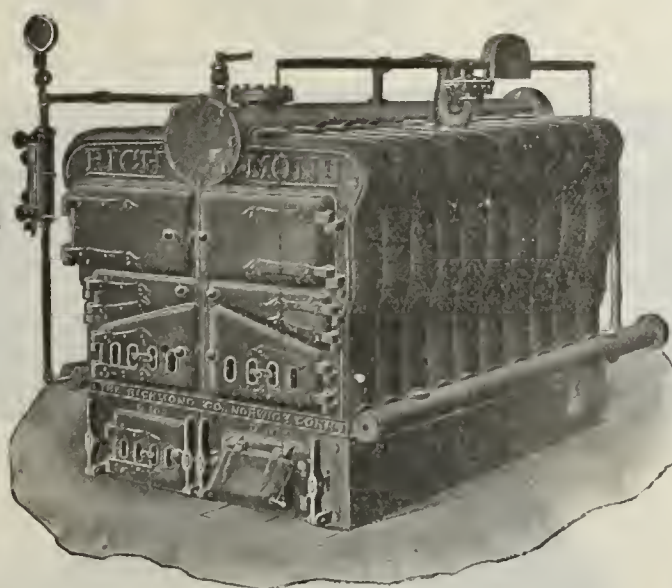
**THE H.B. SMITH CO.,**

**133 CENTRE STREET,  
NEW YORK.**

**510 ARCH STREET,  
PHILADELPHIA.**



**T**HE season is now approaching when you will be *too busy* to consider the fine points of distinction between one boiler and another.



Why should you postpone another day informing yourself fully about the good points of . . . .

# RICHMOND BOILERS

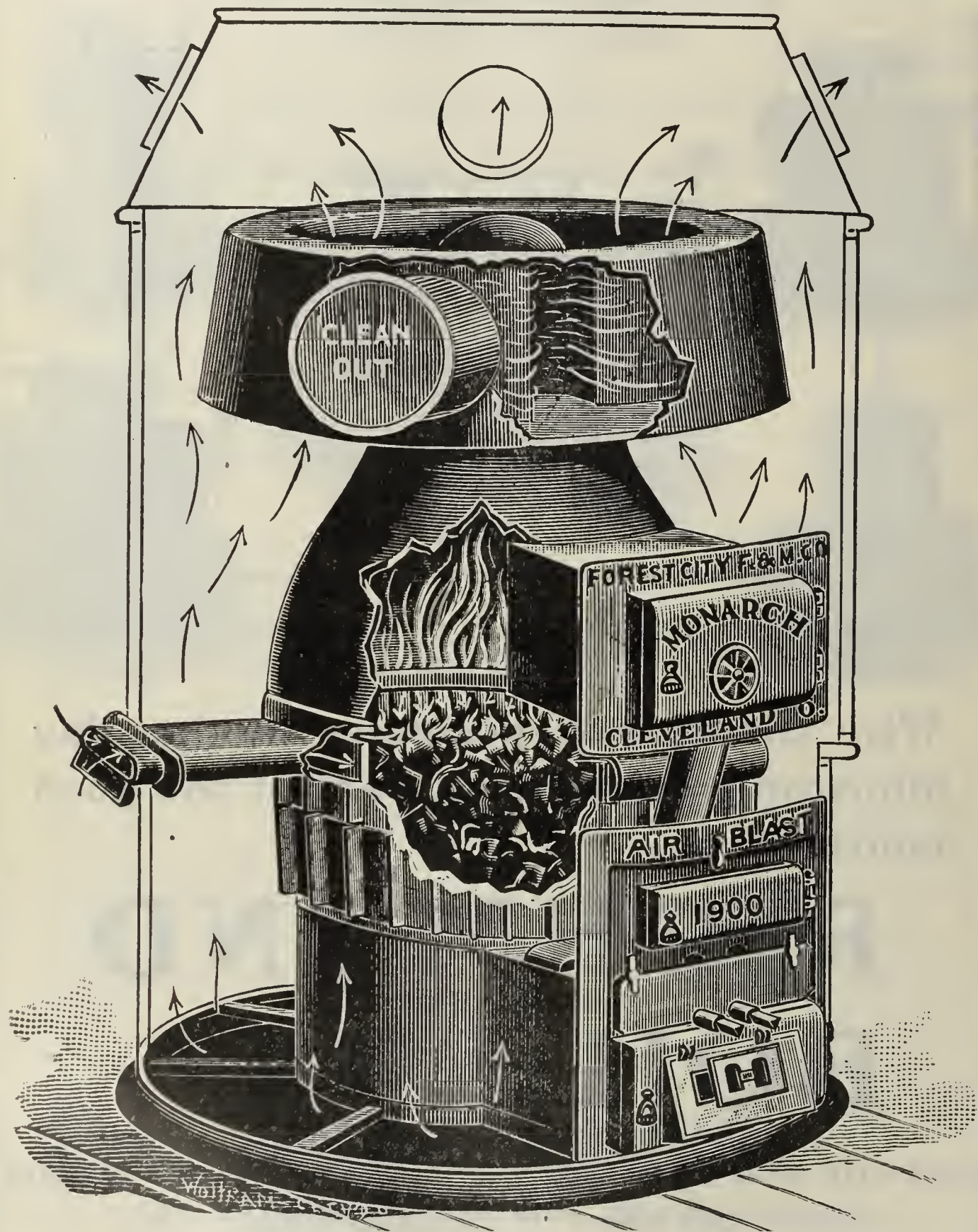
SEND FOR OUR NEW **1902** CATALOGUE. DON'T FORGET  
TO ASK FOR PRICES ALSO.

**THE RICHMOND COMPANY,** NORWICH,  
CONN.

NEW YORK, PHILADELPHIA, PITTSBURGH, CHICAGO, ST. LOUIS,  
738 Park Row Bldg. 18-24 So. 7th St. 210 Ferguson Bldg. Chicago Heater & Supply Co., Rumsey & Sikemeier Co.



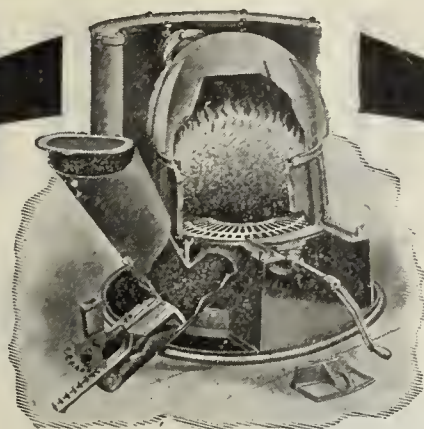
# Monarch Air Blast Furnace



WRITE FOR 1902 CATALOGUE AND DISCOUNTS.

**THE FOREST CITY FOUNDRY & MFG. CO.**  
CLEVELAND, OHIO.





PATENTED.

## IF YOU HAD

all the furnace trade of your community you could throw worry to the four winds.

If you haven't this trade all to yourself, it behooves you to handle the Peck-Williamson Underfeed Furnace and get this trade. You can do it on two points—

On *bona fide* fuel saving every hour the winter through.

On more comfortable, healthy and uniform heat.

This is not a wild, brazen statement. We have the relentless proof back of every word. We might tell you here how our Underfeed Furnace consumes the coal as nature intended, without a wasteful draft through it; without spasmodic combustion; without allowing the heat to creep up through the chimney; without obliging you to open the door and lose good heat and smoke the basement when firing up.

The smoke that goes up the chimney is worth money. It is full of heat. It is heat that the ordinary furnace wastes. The Peck-Williamson Underfeed Furnace uses this heat. When the fresh coal is ignited the volatile gases, which in other furnaces escape as smoke, are burned in the Peck-Williamson Furnace. All the heat units are therefore utilized. What does this really mean? Think it over.

But we have a new and attractive booklet which gives all the facts and gives them so plainly and intelligently that no one can read it without understanding that the Peck-Williamson Underfeed Furnace will burn less fuel and radiate more heat and keep the house warmer than any other.

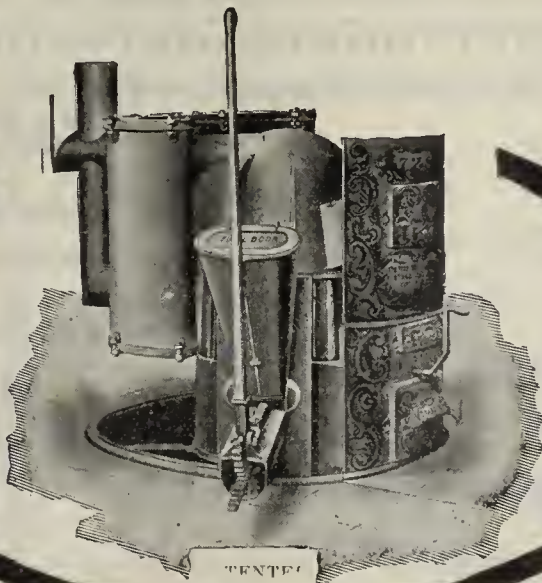
Our force of employes and sanitary engineers stand ready to aid you—to make plans and estimates—to bid on work through you—to write, if necessary, to your wavering customers—to work with you exactly as if you were one of our firm.

Somebody is going to sell this furnace in your community.

Would you feel easy if it were anybody else?

The Peck-Williamson Laundry Dryer banishes the bug-a-boo of washing day. Women want it.

**The Peck-Williamson Company**  
CINCINNATI, OHIO.

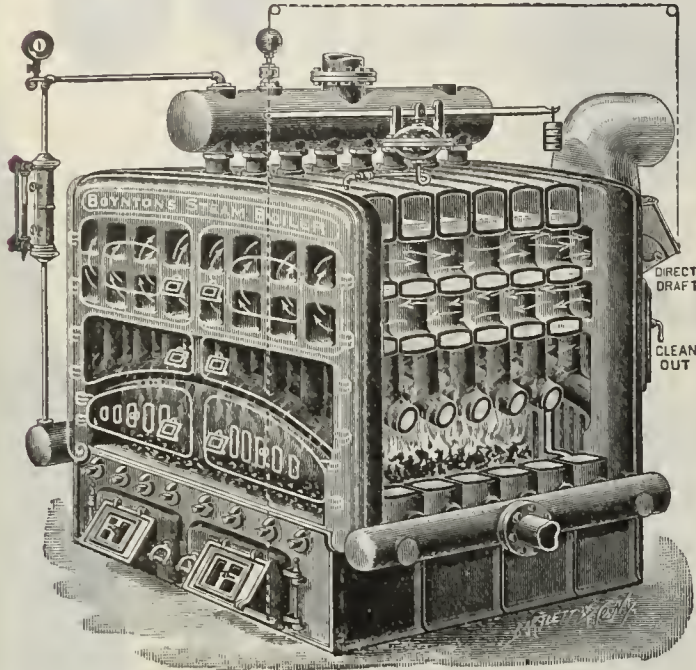


PATENTED

CB



# BOYNTON BOILERS



**STEAM  
OR  
WATER.**

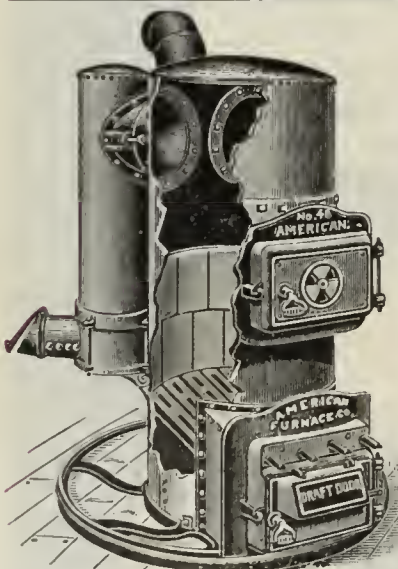
Made in round or sectional form.

*Capacities and Prices on application.*

## The Boynton Furnace Co.,

NEW YORK.

CHICAGO.



Burn Hard or Soft Coal or Coke. Large Doors.

### About Fire Pots.

We formerly lined our fire pots with cast iron—then they cracked and warped. Now we use fire brick for lining and will guarantee it for five years. The lining is replaced through the fire door.

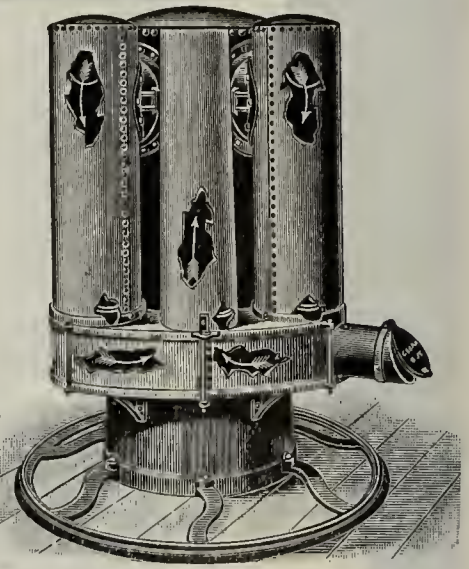
The **AMERICAN FURNACE** is made strong in places where other furnaces have proven weak; it is made of heavy steel and riveted tight like a boiler. Will burn any kind of fuel.

You can only build up a permanent furnace business by handling a first-class furnace. We manufacture for the better class of trade.

### The American Furnace Co.,

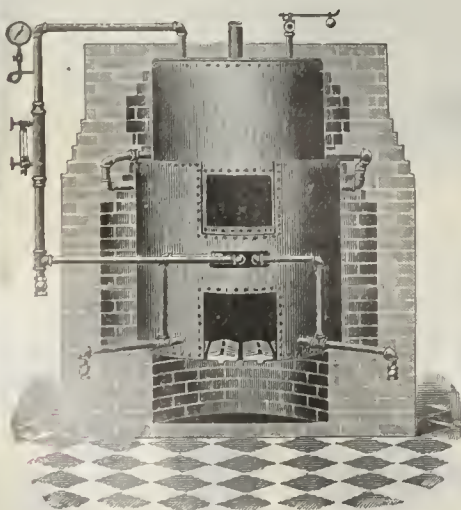
1911-13 PINE STREET,

ST. LOUIS, MO.



Large Radiators, easy to clean out

Write for prices and secure the agency before the other fellow gets it.



**THE  
HAXTON**

**A Steel Brick-Set Boiler for Steam and Water  
Heating—Hard or Soft Coal.**

HAS AN ESTABLISHED REPUTATION.

SOLD ON MERIT.

PRICES TO THE TRADE ONLY.

### KEWANEE BOILER COMPANY

Chicago Store, 169 E. Lake St.

KEWANEE, ILL.

Eastern Representatives:

MODEL HEATING CO.,  
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New York, N. Y.  
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Boston, Mass.

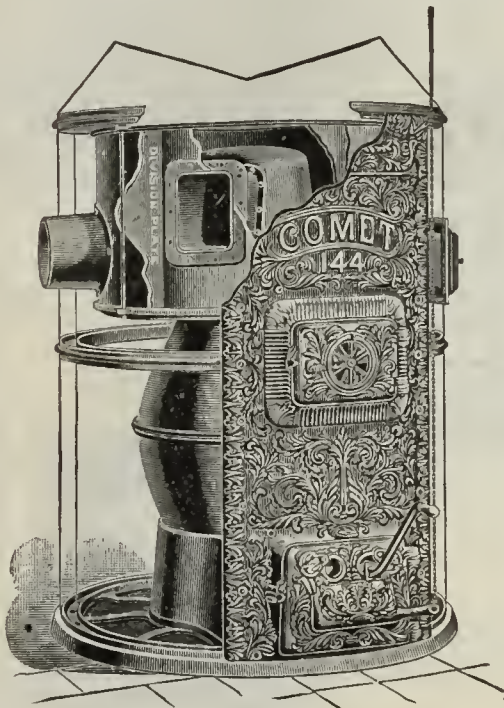


# THE STAMFORD FOUNDRY COMPANY

## SINCE 1830 MAKERS OF CELEBRATED FURNACES, RANGES AND STOVES

THOUSANDS IN USE

RECORD EVERYWHERE ESTABLISHED

*References to Many of Our Furnaces, Now and Through Past 25 Years in Continuous Service*

COMET  
Heavy Steel Drum

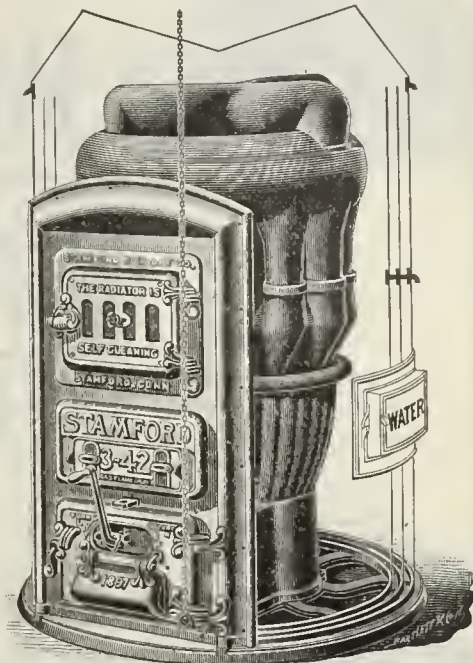
Both furnaces are well made—all exposed parts heavy. *A generation of constant service establishes their record for durability, economy, powerful heating, easy to set, simple to operate.*

The radiator of the STAMFORD ALL CAST FURNACE is a combined dome-tubular and cylinder construction of immense capacity and heating power.

The COMET radiator is made of heavy cold rolled steel. Fire pot and exposed parts especially heavy and durable.

The COMET is made for satisfactory service and not for PRESENT cheapness, ENDING IN EARLY DESTRUCTION.

OUR GUARANTEE follows everything we make, whether stoves, ranges or furnaces, and is established by our over 70 years' record.



STAMFORD All Cast  
Portable or Brick Set

This is the Celebrated American Improved

Send for Catalogue, Capacities and Prices

THE STAMFORD FOUNDRY COMPANY  
STAMFORD, CONN.

## WEIR ALL GAS AND SOOT FURNACE.

THE HEAVIEST STEEL FURNACE MADE.

Absolutely gas and dust tight. A great heat-producer but a fuel saver.

MANUFACTURED BY

THE MEYER FURNACE CO.,

1300-1304 S. Washington St.,

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PEORIA, ILLS.

**"The Handy Furnace Pipe."**

MADE WITH A VIEW OF BEING SAFE.

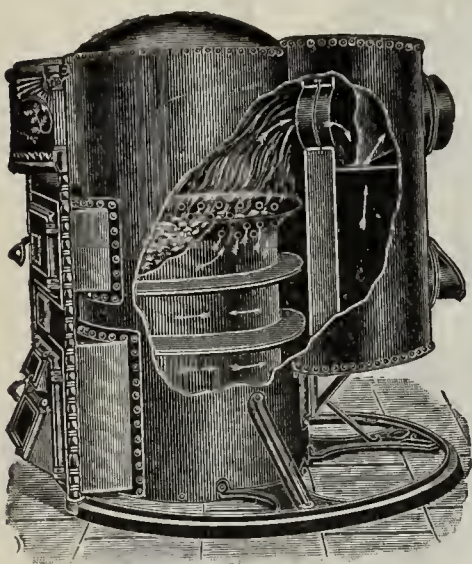
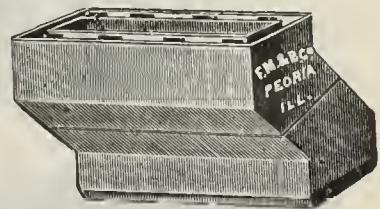
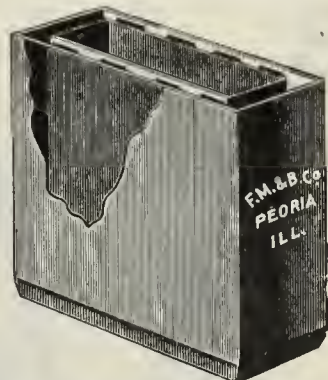
The saving of labor in putting it up really makes it the cheapest hot air pipe on the market.

MANUFACTURED BY

F. MEYER &amp; BRO. CO.,

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PEORIA, ILLS.



## Emperor Furnaces FOR WOOD.

Simple, Safe, Durable.

Economical in Fuel.

The Best and Cheapest Line of Wood Furnaces.  
Furnished for either Brick or Galvanized Iron Casing

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*Bergstrom Bros. Co.*

NEENAH, WIS.





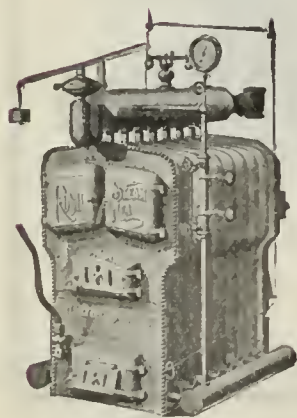
# Royal Heaters.

**HART & CROUSE CO.,**

235 Water St., New York. 78 Lafayette St., UTICA, N. Y. 79 Lake St., Chicago.

The Leading Line of Heating Apparatus.

**HOT WATER,  
STEAM,  
HOT AIR.**



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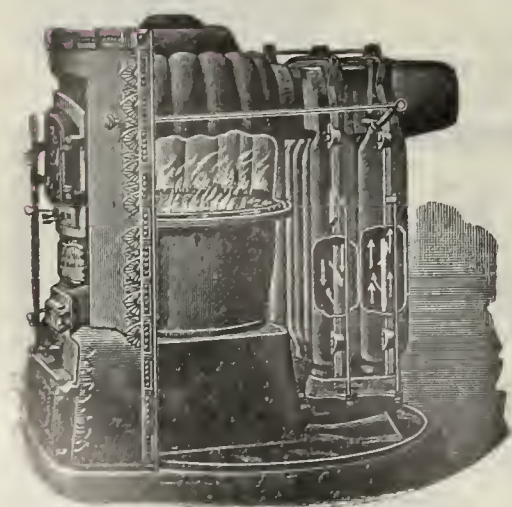
**F  
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S**

**Are TIGERS for heating.**

Every time you think of furnaces to hold trade and get new customers we want you to write **BENGAL FURNACES** big on your mind.

We want you to do this because it is as good a thing for us to have the **BENGAL** handled by progressive furnace men as it is for progressive furnace men to handle the **BENGAL**.

*Send for particulars.*



Eastern Selling Agents:

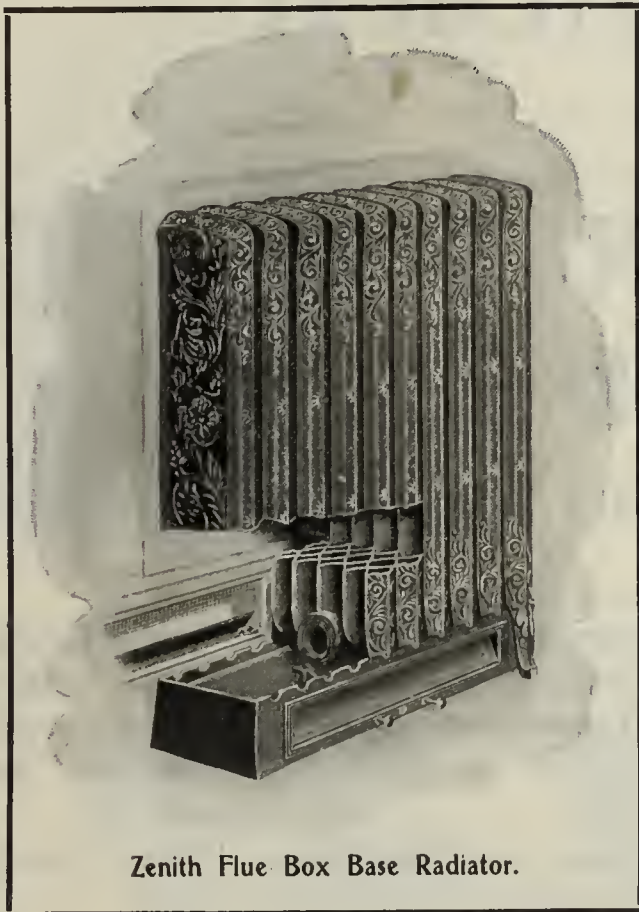
**GURNEY & CO.,**

Washington, Hanover and Elm Streets, Boston, Mass.

**FLOYD, WELLS & CO., Royersford, Pa.**

NEW YORK OFFICE, 210 WATER ST., R. W. HILLMAN, Manager.





Zenith Flue Box Base Radiator.

## OUR ZENITH PATTERNS OF RADIATORS

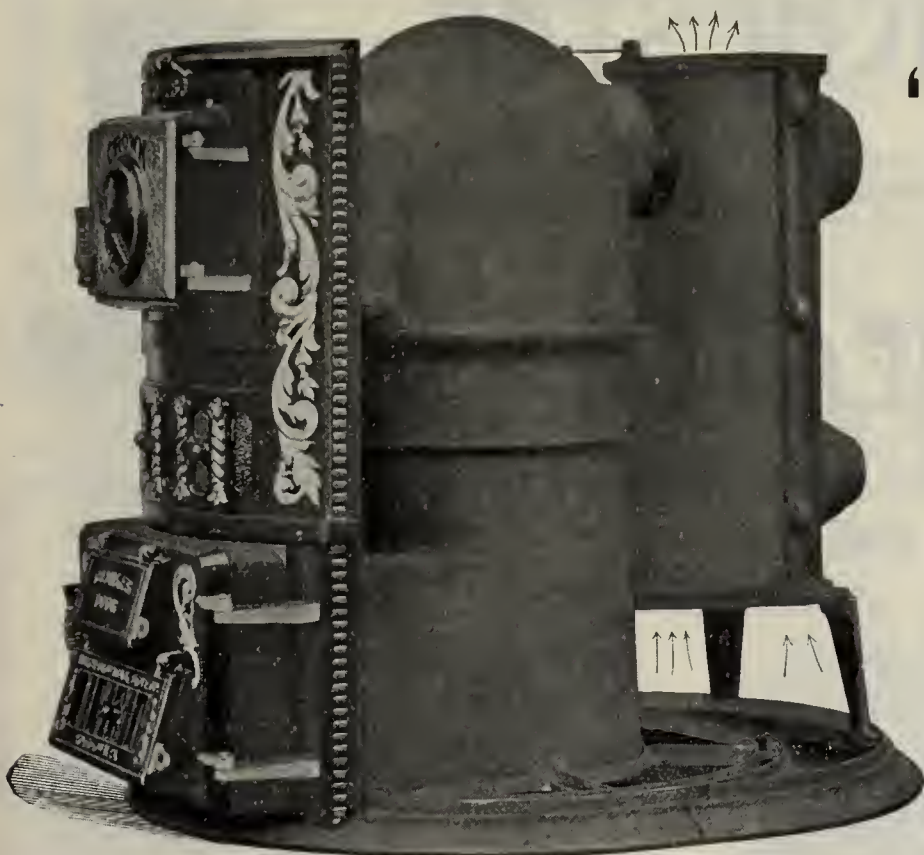
are used in Park Row Building, New York; Stock Exchange, Hotel Touraine, Hotel Marie Antoinette, Bank of New York, St. James Building, Barnard College New Buildings, D. O. Mills' Hotels Nos. 1 and 2, W. W. Astor Apartment Building, all of New York City; Forts Hancock and Wadsworth; P. O. Building, Washington, D. C.; Union Station, Pittsburgh; Broad Street Station and Arcade Building, at Philadelphia, etc., etc., etc. These Radiators may therefore be said to have secured the endorsement of a large number of the most prominent heating engineers in the United States.

Send for New 1902 Catalog.

**AMERICAN RADIATOR COMPANY**

Lake and Dearborn Streets, CHICAGO.

New York. Boston. Philadelphia. Buffalo. St. Louis. Minneapolis. Denver.



## THE CROWN "LOW DOWN" FURNACE

Competes with Steam and Hot Water Heating.

- 1st—In heating at long distance.
- 2nd—In an economical consumption of fuel.

OUR CROWN LOW DOWN FURNACE IS  
**SUPERIOR TO STEAM AND HOT WATER.**

- 1st—In its simplicity of management, any ordinary help can manage this furnace.
- 2d—In its economy of repairs, repairs being only needed at long intervals, the skilled mechanic not required to repair this furnace.
- 3d—*Most important of all* is the purity of air supplied. It's the ideal sanitary house heating construction. Any one caring for the good health and comfort of the home should not fail to examine this furnace before installing any other system of heating.

**March-Brownback Stove Co.**  
POTTSTOWN, PA.

# BRAND STOVE CO.

**STOVES, RANGES and  
FURNACES.**

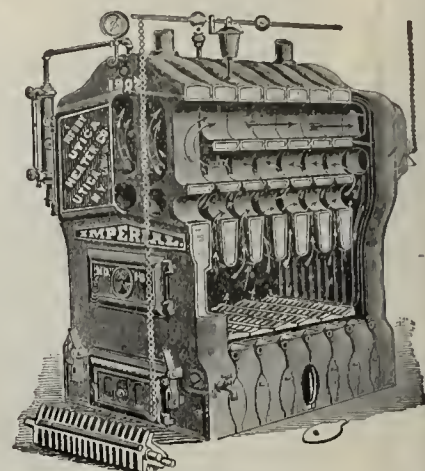
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**MILWAUKEE, WIS.**





# IMPROVEMENT THE ORDER OF THE AGE.



We are constantly making additions and improvements to our entire line of furnaces and boilers. Our aim is to ALWAYS be in front.

With the most complete and extensive line on the market—up to date in every point—for all requirements and all fuel—we are in a position to supply your demands. Rock bottom prices, too.

Let us go into details and send you our catalogues and discounts. It won't do you any harm and undoubtedly will be to your decided advantage.

## UTICA HEATER COMPANY,

General Offices,  
UTICA, N. Y.

NEW YORK CITY,  
106-108 Beekman Street.

CHICAGO,  
33 Dearborn Street.

BOSTON,  
24 India Square.



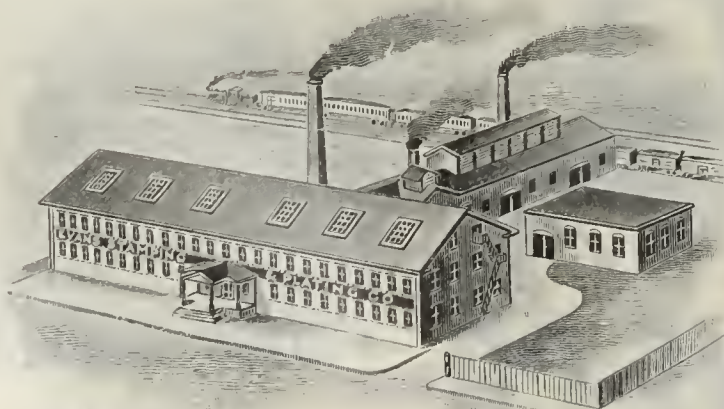
## WINCHESTER

Navigation is full of hidden dangers, and a good ship needs a good pilot. Choosing heaters is always along the same lines. Put your faith in a tried heater like the "WINCHESTER," and you will strike no sunken rocks. Smith & Thayer Company, Boston, Mass.; 105 Beekman Street, New York.

## HEATER.



This is the place where the "ACME"



OVEN THERMOMETER is manufactured.

TAUNTON, Aug., 1902.

MR. MANUFACTURER.

Dear Sir:—

Make your stoves complete by using the "ACME" OVEN THERMOMETER. It is reliable and price is reasonable. Write us for circular.

Respectfully,

EVANS STAMPING AND PLATING CO.,  
TAUNTON, MASS.

C. H. MATTHEWS, Detroit, Mich. (Western Agent).





## You Must Win Out.

The department stores win out because they cater to all classes of trade. You may do the same thing with

### "GURNEY" HEATERS, BRIGHT IDEA, DORIC and 400 SERIES.

For heating large buildings, halls, etc., we furnish "Bright Idea." For heating smaller buildings, residences, greenhouses, etc., "400 Series," and for dwellings, "Doric" Heaters. Thus you don't have to pass by any want. You can bid on them all—and successfully, too, because "Gurney" Heaters **will accomplish more at less cost than any heater made**. Based on actual value, it's easily the cheapest one in the market. Catering to all classes of heating wants

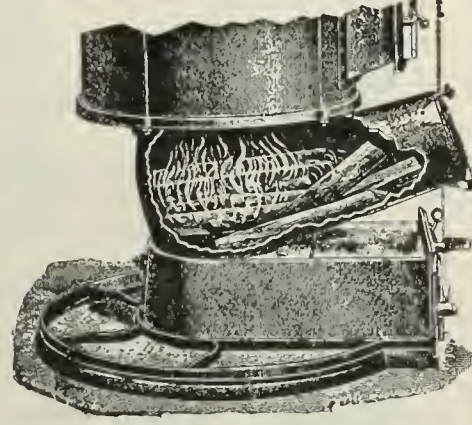
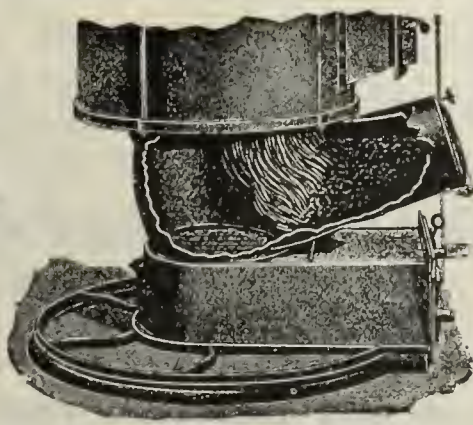
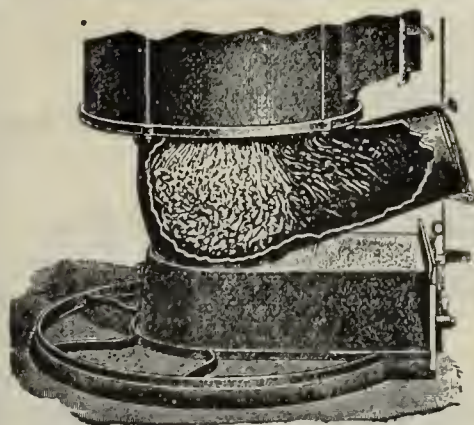
and possessing these marked excellences, you must win with a "Gurney" agency. Write for full particulars and latest catalogue.

## Gurney Heater Mfg. Co.,

74 Franklin St., Boston.

111 Fifth Ave., New York City.

Western Selling Agents, James B. Clow & Sons, 358 Franklin St., Chicago, Ill.



## THREE PRACTICAL USES

to which the *Combination* Fire Bowl and *Coking Magazine* used on the **PATRIC FURNACE** may be put.

The first cut shows soft coal undergoing coking process in magazine, with coked coal in main bowl. *A great fuel saver.* Second cut illustrates fire carried only in magazine, for light Spring and Fall heating, *a great convenience.* Third illustration shows furnace used for wood. *A success for twenty years.*

SEND FOR NEW ILLUSTRATED CATALOGUE.

**THE PATRIC FURNACE CO., = Springfield, Ohio.**

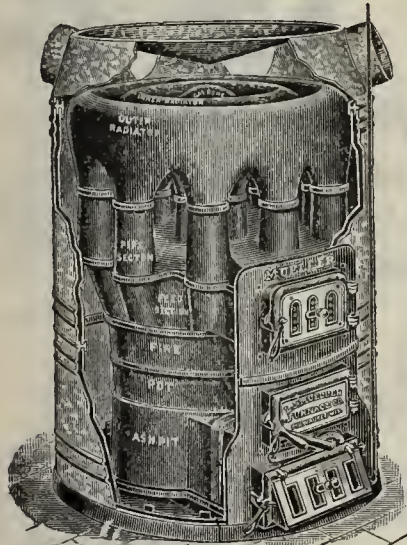
## YOU WILL MAKE NO MISTAKE

IN SELECTING

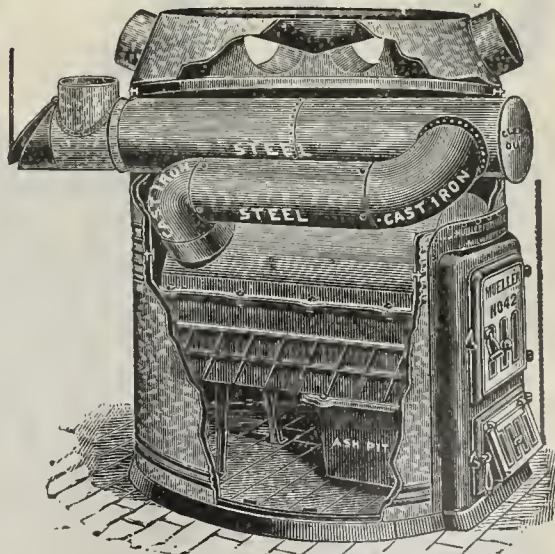
# MUELLER

## Furnaces

### ***NONE EQUAL.***



All Cast Iron Double Radiator.



For Long Wood.

Made in All Styles—For All Kinds of Fuel.

WRITE FOR CATALOGUE AND PRICES.

EVERYTHING IN THE HEATING LINE.

ESTABLISHED 1857.

## L. J. MUELLER FURNACE CO.,

190 REED STREET,

MILWAUKEE, WIS.



# The New WALKER BOILER for Steam: for Water

Our boilers for either Steam or Water Heating will extract more heat from a shovelful of coal and keep the radiation warmer and at a more even temperature than any other boiler. Why? Because every part of its highly effective heating surface in the fire box, or over the fire, is exposed to direct heat. Boilers are fitted with all best and latest improvements, easy to clean flues and to operate. We want you to become acquainted with our productions. It will pay you. Burn any kind of fuel.

**SOLD ON THE HONEST RATING PLAN.**

Catalogue on application.

Correspondence and inspection invited

## WALKER & PRATT MFG. CO.,

31-35 UNION ST., BOSTON, MASS.

*Finest Factory in this Line in the World.*

*Prompt Deliveries.*



Made in 21 Sizes,

For Steam or Water.

**WE** believe a "DIGHTON" Furnace will do an equal amount of heating with less fuel than any other Furnace made.

There is no relation between its cost and its real value.

Some dealers estimate the worth of a Furnace on the price they may have paid for it; others base their estimate of worth upon results secured from actual service.

Any dealer who has ever compared results secured from other Furnaces with an equal number of DIGHTONS will recommend the "DIGHTON" as strongly as we do.

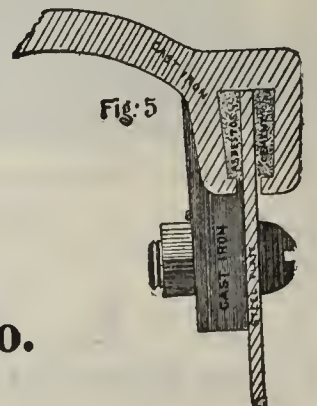
**DIGHTON FURNACE CO., Taunton, Mass.**

# GILT EDGE



stands for best when applied to furnaces. The many dealers who have installed and the thousands of householders whose homes have been heated by our furnaces show they like the Gilt Edge, as will be seen by the testimonials they have written. Let us send you a few of them.

The Keystone Joint used in Gilt Edge Furnaces is the only permanent gas tight steel and cast iron joint on the market.



**R. J. Schwab & Sons Co.**  
**MILWAUKEE**



## There Has Never Been Any Doubt

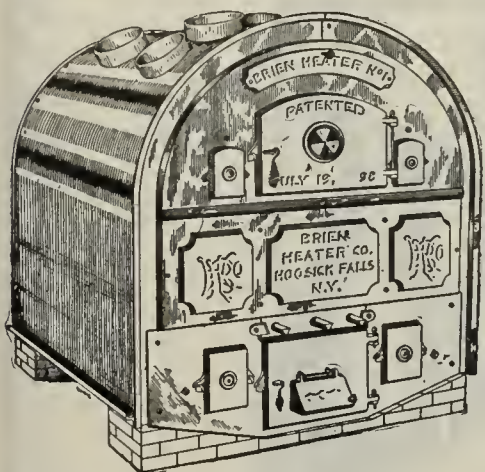
as to the superiority of MOTT'S SUNRAY HEATERS. This great popularity isn't a matter of chance or luck; it is just simply the natural result of merit - of true worthiness. Then the price is right - no extra charge for the name. It will pay you to get our catalogue and discount sheet.

**AGENTS WANTED.**—Many a steamfitter has struck the keynote of success by handling our goods. We will grant agencies to established firms if territory is uncovered. Liberal inducements to the right parties.

**THE J. L. MOTT IRON WORKS,**

(Heating Dept.)

84-90 Beekman St., New York, N. Y.



## Brien Heater.

A perfect, all cast WOOD or COAL burner. There is no other Hot Air Furnace as low down as the "BRIEN."

Write for territory, catalog and prices.

**BRIEN HEATER CO.,**  
HOOSICK FALLS, N. Y.



## Portable OVENS

FOR  
CORE BAKING,  
JAPANNING,  
ENAMELLING, Etc.

OVENS FOR Bakers, Confectioners, Hotels, Etc.

Made in all sizes, single and double, for coal, wood, natural or artificial gas.

SEND FOR CATALOGUE.

The G. S. BLODGETT CO., Burlington, Vt., U. S. A.



## ROBBIN HOT WATER HEATER.

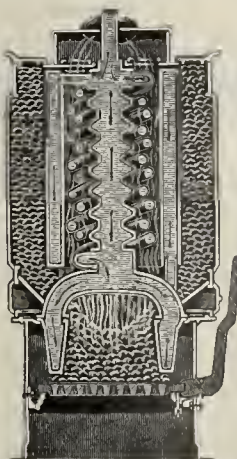
For heating dwellings and other buildings; also for greenhouse heating.

**SAVES FUEL,**

and is a success in every way.

Send for catalogue.

**A. L. Swett Iron Works,**  
MEDINA, N. Y.



## Pierce BOILERS and RADIATORS

for Steam and Water Heating.



Pierce Improved Florida Steam Boiler.  
LARGE HEATING CAPACITY.  
ECONOMIC IN FUEL CONSUMPTION.

Endorsed by the foremost Architects  
and Heating Engineers.

Write for New Illustrated Catalogue.

**Pierce, Butler & Pierce Mfg. Co.,**  
Syracuse, N. Y.  
New York. Boston. Philadelphia.

## The Champion Hot Water Combination Heaters.

They Fit Any  
Furnace.

Base section when  
used without ring  
sections



Ring Section



These Heaters are made in five sizes diameter, and from 100 to 700 square feet radiation capacity. Will heat those cold rooms or an addition to the building. Will increase the capacity of any furnace. Are cheaper than coils and will do more work. Write for new circular. Manufactured by

**FRANK D. STOLZ,**  
115 Lake St., Chicago, Ill.



## "ABC" Blast Gates

Designed for closing pipes supplying blast to furnaces, forges, boilers, etc.

Simple. Effective. Inexpensive.

Send for Prices.

**American Blower Co.,**  
DETROIT, MICH.

New York. Chicago. London.



# Have You Studied These Stoves?



IT WILL PAY YOU WELL

---

**GEORGE M. CLARK & COMPANY,**

73 LAKE STREET, CHICAGO.



**Dear Mr. Stove Dealer:**

The great **shortage** of **hard coal** means no hard coal stove trade this year. Oak stoves are dirty and are sold without profit.

## COLE'S ORIGINAL HOT BLAST

is the only stove in America that will burn soft coal in a cleanly manner and take the place of the base burner and give the dealer a fair profit.

Why not secure the exclusive agency for your town at once? We guarantee them to make \$2.00 soft coal equal \$8.00 hard coal; same even heat day and night; same cleanliness; fire never out; five sizes, from bed room to store heater; three grades.

We are the largest manufacturers in the United States.

Our prices are the lowest.

You cannot afford to fool with inferior imitations.

Write at once.

Yours truly,

**COLE MANUFACTURING CO.,**

**CHICAGO, - - ILL.**

**3218 to 3238**

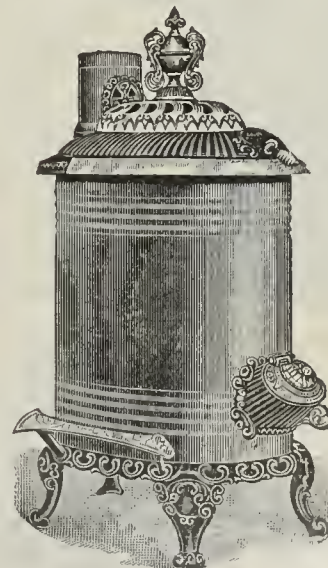
**So. Western Ave.**



Shows No. 205, for coal. Saves escaping gases in soft and hard coal, wasted in other stoves. Will hold fire 36 hours on one hod of soft coal.

### TOO HOT FOR SPRING AND FALL - -

It is next to impossible to run your furnace so as not to get too much heat, in Spring and Fall.



Shows No. 745, for wood. Made in 5 sizes, 8 grades. They burn wood, cobs and trash. Even heat day and night. Fire not out during the entire winter. No danger of your plants' freezing. They cost no more than other stoves, and burn less fuel. Look out for imitations claimed to be just as good.

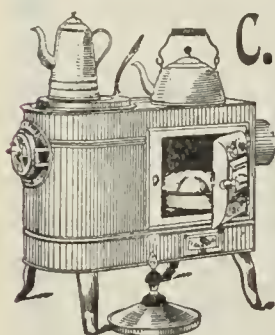


# GLENDALE

## Stoves and Ranges



Manufactured by  
**SOMERSET STOVE FOUNDRY CO.,**  
Send for a Sample. **SOMERSET, MASS.**



## C. H. Cosby's

### PATENT AIR TIGHT BAKER AND HEATER.

Agents wanted in every  
town and city.  
Write for particulars.

**C. H. Cosby,**  
423 W. Broad,  
Richmond, Va.

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### Adjustable Thimbles.

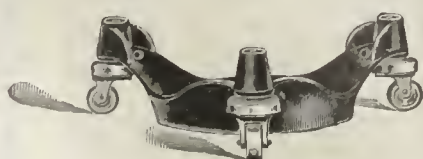


HEADS,  
Stamped Steel.  
CYLINDERS,  
Tin, Double  
Seamed to Head.  
Breakage Impossi-  
ble.  
Indenting of Cylin-  
ders Prevented.

Write for Prices.

**L. B. BAKER MFG CO.,**  
RACINE, WIS.

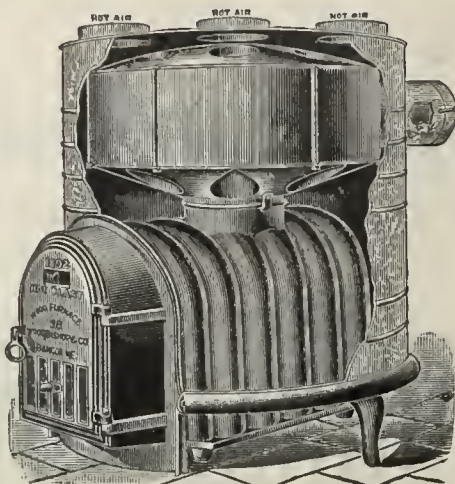
## THE GEM BALL BEARING STOVE CASTERS.



The Coming Stove Truck.  
MFD. BY

**KRAMER BROS., - Dayton, Ohio.**

# WOOD FURNACES



THE HOT BLAST.

Made With SINGLE PIECE Fire Box Body—

a practically indestructible casting, heavily  
corrugated to stand the strain.

HAVING IMMENSE AREA OF RADIATING SURFACE—

all directly exposed to the heat of the fire, giv-  
ing great heating capacity even when fire is low.

MADE IN A WOOD SECTION,

where wood is burned practically—not theo-  
retically.

Our IMPROVED MONITOR,

2 sizes, PORTABLE OR BRICK SET

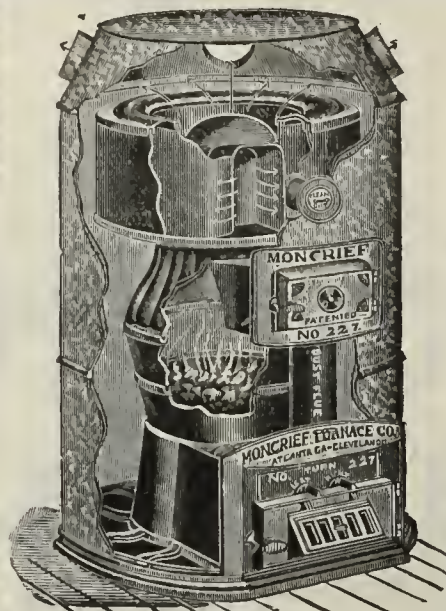
Our Low Priced HOT BLAST,

3 sizes, PORTABLE OR BRICK SET.

Thousands in use in all sections of the country.

Send now for illustrated booklet giving full particulars and  
testimonials.

**Wood & Bishop Co.,** Established 1839. 329 Main St., Bangor, Maine.



## MONCRIEF FURNACES

PORTABLE  
and BRICK SET.

*Unequalled in the Great  
Essentials---Simplicity,  
Durability, Economy,  
Capacity, Comfort,*

**NO BETTER MADE.**

Write for catalogue. Special price to the trade.

MANUFACTURED BY

**The MONCRIEF FURNACE &  
FOUNDRY COMPANY, ATLANTA, GA.**

Sectional View of the  
**TORRID**  
Fine Coal Burner



For Steam or Hot Water Heating.

This boiler is made on an en-  
tirely new principle and is

## The Only Boiler

that will burn Pea or Buck-  
wheat Coal successfully.

SAVES TIME.

SAVES MONEY.

RESULTS UNEQUALED.

MADE BY

**W. H. DRAKE**

36 Clinton St.,  
NEWARK, N.J.

MANUFACTURER OF

**The TORRID Steam and Hot Water Boilers**  
for burning either anthracite or bituminous coal.

Factory, Hackettstown, N. J.

Send for catalogue.

# The Household Furnace

"Healthy Heat and Plenty Of It."

with its brick-lined firepot, patent  
auxiliary radiator and many other  
special features will heat the cold-  
est house with smallest expense for  
fuel. Write for catalogue to

**The White Warner Co.**  
Taunton, Mass.



Height over all,  
4 ft. 3 inches.

CLEAN  
CUT...

CLEAN  
CUT

## The FORBES FURNACE.

You run no risk in putting in the  
**Forbes Furnace.**

When properly installed we guarantee them in every case.

They are constructed entirely of cast iron.

No sheet iron drums.

Our radiating tubes are  $\frac{1}{8}$  in. thick, and will wear for years.

Specially suited for low cellars.

SEND FOR CATALOGUE AND FULL PARTICULARS.

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## The Helios-Upton Co.'s

First on the Market. 150,000 Sold.



No. 420, with Projecting Laminæ Cover.  
3 inches in diameter.

## STANDARD Oven Indicator

has a dial graduated in the simplest possible manner, as can be seen. This graduation was adopted because every oven has its own peculiarities, and an indicator adjusted to one oven might be incorrect for another. The *Standard* can be adjusted to any oven and has no complicated parts. Made in 3 styles.

Send for circular.

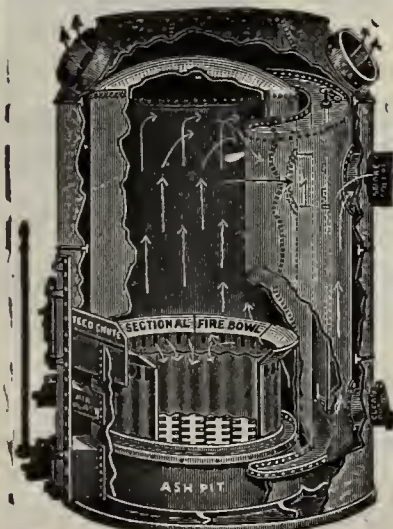
## HELIOS-UPTON COMPANY,

HENRY GLEASON, Agent, 258 Broadway, N. Y.

Peabody, Mass., U. S. A.

All Kinds of Special Instruments and Appliances Manufactured by Contract.

## The Torrid Zone Furnace



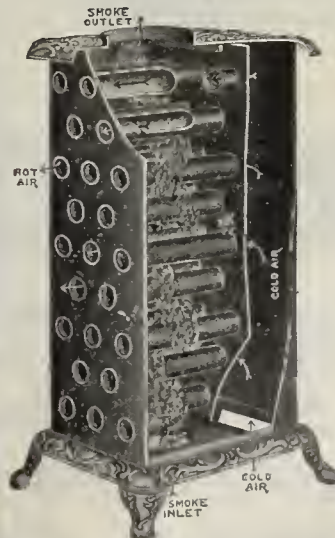
is a trade winner because it has points of merit peculiar to itself that can be found in no other steel furnace. Our new catalogue is now ready to mail and a description of our Hot Air and Hot Water Combination Furnace can be seen in it. We furnish either the cast iron lining or the fire brick at the same price. Our Wood Furnace is called a powerful heater by those who use it.

CATALOGUE FREE.

**Lennox Manufacturing Company,**

Elghth Ave. and Frederick St.,  
MARSHALLTOWN, IOWA.

## INDEPENDENT STOVE PIPE RADIATORS.



Don't buy Radiators without learning about the Independent for 1902.

**Independent Register Co.,**  
CLEVELAND, O.

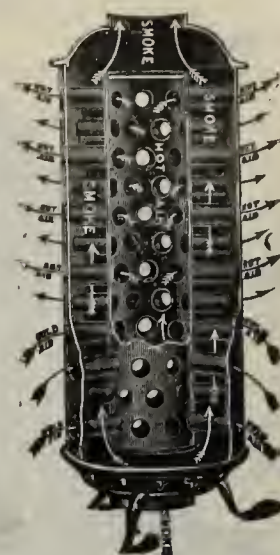




A Tea-Kettle Boils Quicker on my Chimney than on my Stove.

## IS IT SO?

It is said that a tea-kettle will boil quickest on top of a chimney. However that may be, all agree that there is too much heat wasted there. Nothing but the cross tube **ROCHESTER RADIATOR** has ever trapped it. If you were to heat a poker, would you hold it at the side of the flame or over the top? Or would you cook food on the side of a cook-stove in preference to the top? It is thus with the **ROCHESTER RADIATOR**, which takes the heat from the top of the current and not from the side. The cross tubes cool the hot current, just as you would blow across a cup of tea to cool it, only there are from 96 to 120 such currents in operation.



4,868 sq. ins.

## ROCHESTER RADIATOR CO.,

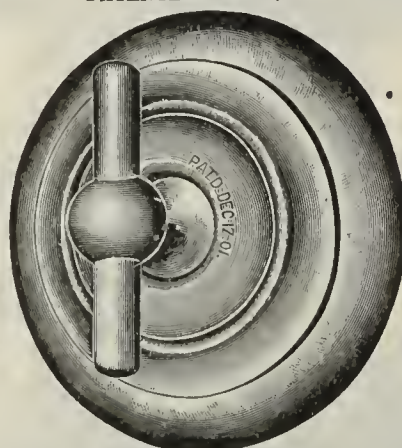
100 Furnace St., ROCHESTER, N. Y.

SOMETHING  
NEW ....

### Sheet Steel Draft Registers with Screws Complete.

PATENTED DEC. 17, 1901

Threads are cut and  
disk is securely  
fastened  
*Without cotter pins  
or washers,*  
Yet it is loose or tight  
as wanted.



#### STOCK SIZES.

|        |        |
|--------|--------|
| 2½ in. | 4 in.  |
| 3 in.  | 4½ in. |
| 3¼ in. | 4¾ in. |
| 3½ in. | 5¼ in. |
| 3¾ in. |        |

Any size made to order  
in quantities.

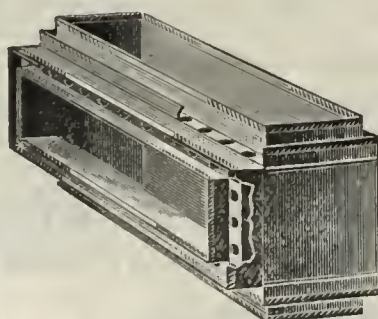
Manufactured  
by

The H. A. MATTHEWS MFG. CO., Seymour, Conn., U. S. A.

FURNACES

EXCELSIOR HEATING  
SPECIALTIES

PIPE



Excelsior

FURNACE PIPE,  
HOT AIR REGISTERS,  
STOVE PIPE ELBOWS,

ARE ALL SELLING AT

## MUCH BELOW

their real value.

This is also true of many other things which  
we make, as our Quotation Sheet will demonstrate.



EXCELSIOR IDEAL  
ELBOW

ELBOWS

EXCELSIOR STEEL FURNACE CO.  
38-40 W. MONROE ST. - CHICAGO.

REGISTERS

REFRIGERATORS,  
BLUE FLAME OIL STOVES,  
GASOLINE STOVES.

LARGEST JOBBERS  
in  
NEW ENGLAND.

GAS RANGES,  
FURNACES, STOVES,  
RANGES AND REPAIRS.

HENRY N. CLARK CO., 56 and 58 UNION ST., Boston, Mass.



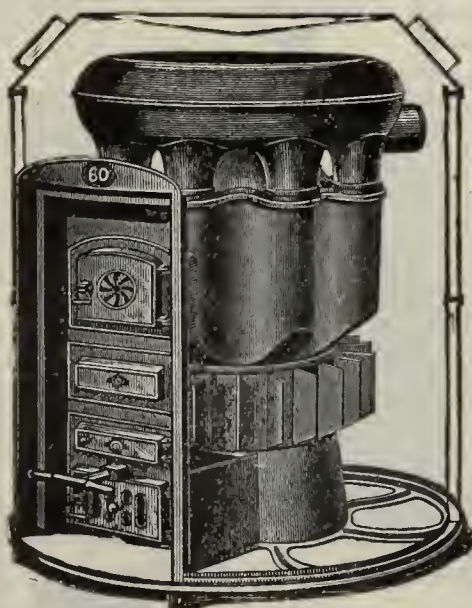


## THE MINERS' STRIKE



will make coal exceptionally high the coming season. Be prepared to tell your customers how they can utilize one ton of coal so that it will give the heat they have heretofore secured from two tons by the use of a **NEW ERA RADIATOR**. Send for our inducements to handle these Radiators now.

**WILMOT CASTLE & CO., 76 Elm Street, Rochester, N. Y.**



*Imitation is Flattery.*

## Cory's All Cast FURNACES

HAVE BEEN COPIED  
BUT NEVER EXCELLED.

An Absolutely Gas Tight Furnace  
Without Bolted Joints.

**UZAL CORY & CO.**

210 WATER ST., NEW YORK.

Established 1847.

**H. & C.**

Wrought  
Steel

**REGISTERS**

...and...

**VENTILATORS.**

**STRONG, LIGHT,  
HANDSOME in SIM-  
PLICITY of DESIGN.**

## SOFT COAL IS CHEAP FUEL

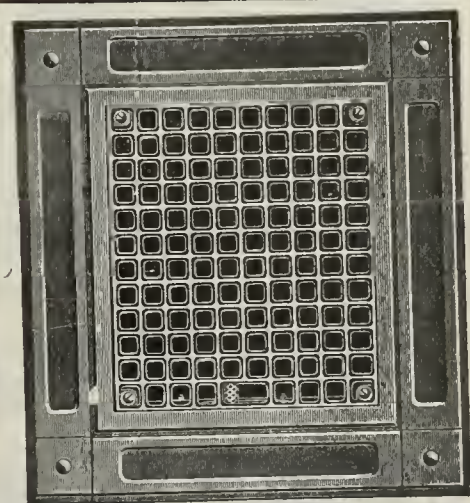
especially if properly burned  
in the right kind of a furnace.

## CANTON PERFECT BLAST FURNACES

Were BORN and BROUGHT UP in a SOFT COAL DISTRICT.

Write for facts and prices.

**THE BONNOT COMPANY, - Canton, O.**



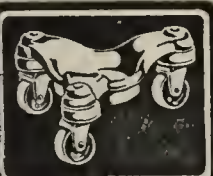
FURNISHED WITH  
WROUGHT STEEL  
or WROUGHT BRASS  
FACE PLATES, AND  
IN ALL FINISHES.

Manufactured by

**The HART & COOLEY CO.,**  
New Britain, Conn.

GENERAL SALES AGENTS,  
**STANLEY WORKS,**  
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FOUR TO THE SET



**"BOSS" STOVE LEG  
CASTER TRUCK**

MOUNTED  
ON THE

**"BOSS" PATENT ANTI-FRICTION  
ROLLER BEARING CASTERS**

**TUCKER & DORSEY MFG. CO.,**  
INDIANAPOLIS, IND. U.S.A.



1/2 DOZ. SETS IN A BOX.



## HIGH GRADE PORCELAIN ENAMELING

in all colors; Stamped Steel Kitchen Sinks, Steel Refrigerator Linings, Lamp Shades and Tops a specialty. As our enamels are very hard and tough they are well adapted for Gas and other Stoves.

Estimates furnished upon receipt of sample and particulars.

**JOHN PEIL ENAMELING WORKS, - - - COLUMBUS, OHIO.**



# We Don't Make Furnaces

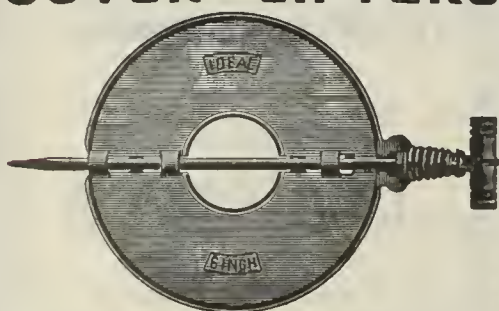
but we supply 75% of the furnace manufacturers with **COLEBROOK'S** Asbestos Furnace Cement. How is it with you? Are you using **COLEBROOK'S** Asbestos Furnace Cement and **INDESTRUCTIBLE** Stove Putty? Gets as hard as iron and no heat can destroy it. Why not have the best? Poor cement is not cheap at any price and **COLEBROOK'S** is as cheap as the cheapest. Put up in all size removable cover cans, tubs, barrels and half-barrels. Samples and prices for the asking. Manufactured only by

**W. H. COLEBROOK, SONS & CO.**

SYRACUSE, N. Y., U. S. A.

P. S.—Largest makers of Asbestos Furnace Cement in the world. A strong statement but conscientiously made.

## IDEAL DAMPERS, COVER LIFTERS



## AND POKERS



HAVE NON-HEATING  
HANDLES OF ELEGANT  
DESIGN AND FINISH.  
THEY ARE THE BEST.

**STOVER MFG. CO.**

164 RIVER ST.,  
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## HOW TO HEAT GREENHOUSES.

A Long Felt Want is Filled in the New Book.

## Dean's System OF Greenhouse Heating.

It is a guide or hand book giving Formulas for obtaining different temperatures. Tables giving radiation necessary per square foot of glass. Tables giving glass surface. Sizes of flow and return pipes. Radiation per foot of pipe of various sizes, or the number of feet of radiation in any number of feet of pipe. List prices of pipe and fittings, with much other information of importance, as applied to the effective heating of greenhouses.

By MARK DEAN.

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## Triumph Adjustable Stove Pipes Take the Lead:

They are easy to put together.  
They are easy to take down.  
They can be nested for storage.  
They save freight.  
They need no wiring.  
They cannot telescope.  
They are the only safe stove pipe.  
They are what the people want.



WRITE FOR CATALOGUE AND PRICES.

If you would like to have the sole agency for your town, write us for it.

**The Triumph Adjustable  
Stove Pipe Mfg. Co.**

JOLIET, ILL.



# COAL HODS.



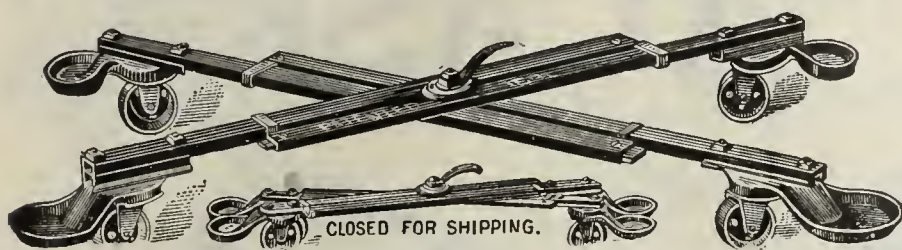
We know you want the best Coal Hods your money can buy. But you want to know that you are going to get them promptly. We are prepared to furnish you not only with the best Coal Hods made, but to give them to you just when you want them. No delay.

**SIDNEY SHEPARD & CO.**

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The Model Stove Truck is out of sight when under a stove.



Is all steel, has only one adjustment, is practically indestructible.

We offer to take back and refund money if, after a month's trial, the Model is not satisfactory.

SEND FOR CIRCULAR AND PRICE.

The S. M. HOWES COMPANY,  
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## STOVE REPAIRS

If you order from us and save 200 Premium Shipping Tags  
We will give you, free, a one thousand-mile mileage book on any railroad.

We Carry in Stock Repairs for 20,000 Different Kinds of Stoves, Heaters and Ranges

CHAS. C. HEATH & CO., 136-138 N. 2d St., Philadelphia, Pa., and Baltimore, Md.

Sales Agency for the  
ALUMINUM and ELECTRIC  
OIL HEATERS.

Best on Earth.

## The YANKEE Hot Air DAMPER (IMPROVED.)

HOT AIR.

THE YANKEE EXCELS.

SMOKE PIPE.



Above All—Cheapness—a dealer cannot possibly make dampers as cheaply as we sell the Yankee. Easily put in and taken out of pipes. Stiffest, quickest-working and neatest damper on the market



It is impossible for this rod when in position to move either way.

ROD POINTS: Has wood enameled handle. Wood handle cannot come off. Washer and spring cannot fall off the rod. Same size of holes are punched on each side of pipe. Rod is made of 1/4 in. cold rolled steel and slips into damper very smoothly. Sample sent to any Dealer without charge.



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ASSORTED PACKAGES.

Put up expressly  
for the Retail Trade.

ONE POUND—4 SIZES.

1/4 lb. each size.

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| North Carolina, . . . . . | \$2.00 | 4 1/2 x 6     | 2 1/2 x 3 |
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TWO POUND—8 SIZES.

1/4 lb. each size.

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1/4 lb. each size.

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| Wyoming, . . . . .        | 4.25   | 2 3/4 x 4 1/2 | 2 x 4         |
|                           |        | 3 x 3         | 2 3/4 x 2 3/4 |
|                           |        | 2 1/2 x 3     | 5 x 6 1/2     |
|                           |        | 2 x 3         | 2 1/2 x 5     |
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Above Prices Net. No discount.

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NEW YORK.

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Specially Prepared for the  
Stove Trade.

OHIO MICA CO., CANTON, OHIO.



DO you want  
Stoves and  
Heaters that are  
easily sold and

STAY SOLD? We have  
been very successful in de-  
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## PATTERNS

FOR STOVES AND HEATERS.

First-class in wood and iron.

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THE GEORGE W. COPE  
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ORIGINAL, ARTISTIC AND  
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Cor. Randolph and Atwater Sts.,  
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SHINES FOR ALL

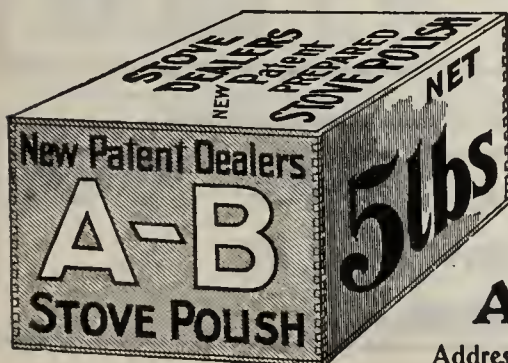
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will polish anything.  
Write for free sample

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## SAMPLES SENT FREE!



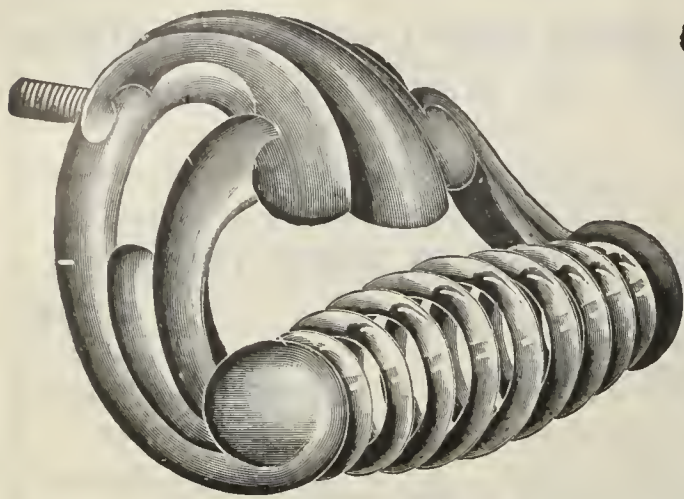
To Stove Dealers and  
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This new patented prepared powdered stove  
polish mixes quick, shines easy, black, brilliant  
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It will pay you. Write us for prices. Paste or  
Dry Stove Polish, 5-lb. can, boxes or bulk.

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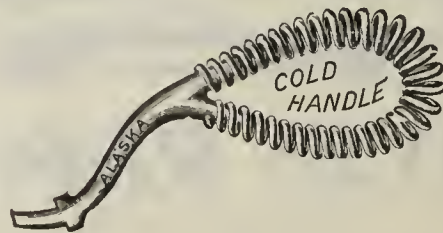
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## Troy Nickel Works,

ALBANY, NEW YORK.

All The Latest Novelties in Stove Trimmings.

### ALWAYS COLD.

#### Are You Interested



in a money saving line of goods such as the Rutland Improved Stove Lining? Most of our business comes from dealers whom we have pleased for years and we are confident that we could please you. Before you place your next order for plastic lining we want you to write for prices and discounts.

#### RUTLAND FIRE CLAY CO.,

60 Wabash Ave.,  
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NORTH EAST, MD.

Rutland, Vt.



## "O.H." ONE PIECE STOVE PIPE Elbows

Perfectly round and true to size. With long ends, DOUBLE LOCK SEAM in throat or under side of Elbow.

Handsomest, Heaviest and Strongest Stove Pipe Elbow Manufactured.

—SOLE MANUFACTURERS—

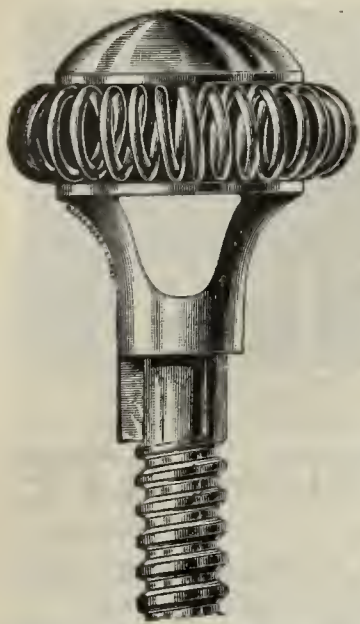
THE LAWRENCE-LETTS ELBOW CO., Ltd., Waverly, N. Y.

## WILLIAMS STOVE LINING CO.

Eagle Clay. Gas Fuel. Stove Bricks.

TAUNTON, MASS.





No. 346 Draft Register.

No. 520 ZERO Screw  
Knob.

MANUFACTURED BY

**W. H. SHIELDS & CO.,**

Successors to W. F. GREENE.

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**MARCY STOVE REPAIR CO.,**

MANUFACTURERS OF

**RANGE, STOVE AND HEATER REPAIRS****AND FIRE-BRICK LININGS,**

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**FIRE BRICK****PRESBRY STOVE LINING CO.,**

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**M. D. VALENTINE & BRO -**  
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**WATER FRONTS.**

Try us, we have the Stock.

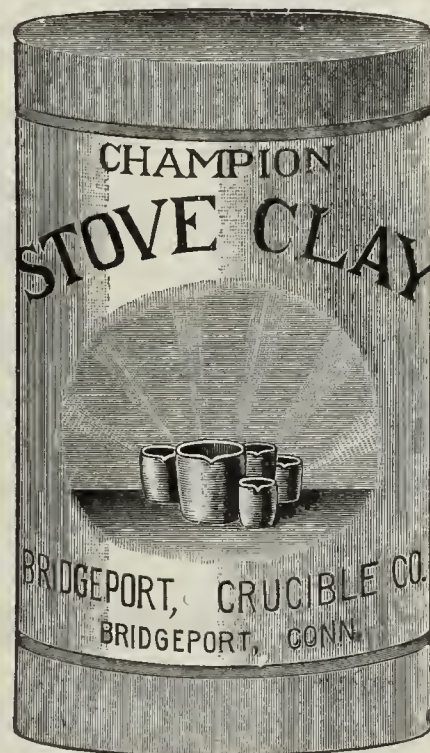
Our price is right.

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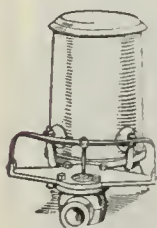
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**CHAMPION STOVE  
CLAY**Is the only brand made of  
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Economizer**Attached to stove pipe, saves more  
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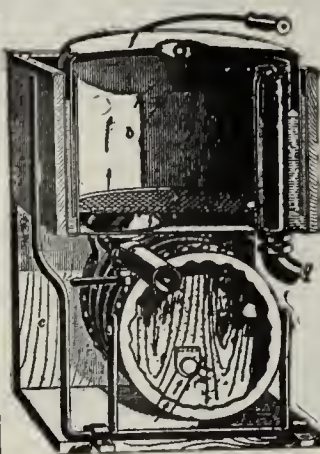
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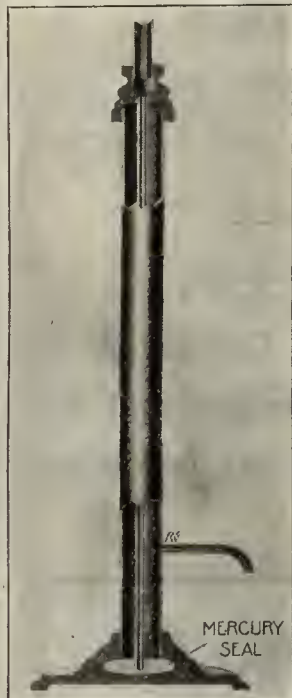


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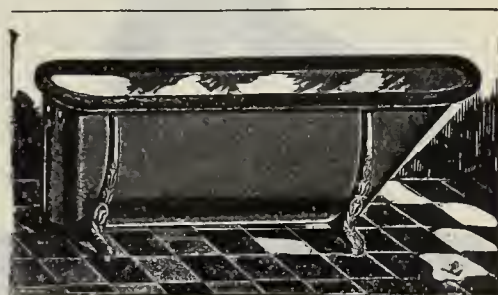
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Volume LVIII.....No. 8  
Index to Reading Matter.....Page 63

## Workmen's Organizations and Discipline in Hazardous Trades.

It is curious that the managers of labor unions have done so little in one direction in which there is room for much improvement. We do not recall a single instance of their using their power over their own men to enforce discipline in hazardous callings. The demand for adequate safeguards to protect the men against injury is always upon the employer, and he is relied upon to watch the conduct of the workmen and compel them to observe rules which are regarded as oppressive and are violated and evaded as often as possible whenever they are considered inconvenient. Individual men do protest to their fellows when the latter directly endanger their lives by recklessness or carelessness, but it is considered, apparently, a breach of honor to bring the matter to the attention of the management. We imagine that it is hopeless to expect workingmen to overcome that feeling, but it would seem that the organization of the men themselves, the shop or mill committee ought to take cognizance of the attitude of habitual offenders. The miner who tampers with his safety lamp deserves to be blown up, but unfortunately dozens and sometimes hundreds of his innocent fellows lose their lives and there is often very serious damage to the property of employers who are exhausting every known means to safeguard their men.

If there is any one matter in which employer and employee should co-operate heartily and loyally it is in the protection of life and limb. The great majority of employers and their works representatives are usually far more willing to provide the means and methods, but the men are only too often indifferent and hostile, and there are usually some of them who consider it a praiseworthy feat to circumvent those in authority by breaking or ignoring the rules which aim to guard them against injury. Discipline may be irksome, but in this respect it should have the backing of whatever organizations exist among the employees themselves, and if they do not exist they should be formed. It will probably be found in the majority of cases that if the rules framed by the employer are unreasonable modifications can be readily secured by well supported representations. The fools should be watched by all and be gotten rid of as soon as possible.

## Trade Protection.

It is naturally exasperating to those who are active in efforts for the betterment of conditions in their trade that others who contribute nothing to the effort should not

only share in the benefits but also increase the labors of the associations. This feeling has led to some unfortunate contentions among the plumbers in different cities, and the retaliatory methods employed have developed some strife, if not actual warfare. It is unfortunate that those who are most interested are so occupied with their regular business and with aggressive and defensive measures that they are not prepared to take a more philosophic view of the situation and expend their energy on different methods of accomplishing the same result. Such a change would lead to more harmonious relations and remove some bitterness which assuredly does not add to the comfort of any concerned. In another column we present the expressed views of the steam fitters on a question of vital importance to them and one which is worthy of consideration by the manufacturers of heating apparatus. Like all other questions, it has two sides. It is possible that the manufacturer may incline to the opinion that the canvass which he is paying his men to make increases the business for the steam fitter and is therefore entitled to some consideration. On the other hand, the steam fitter feels that in maintaining an establishment continually at the disposal of the public he also is exploiting the field. In the past a satisfactory agreement was reached which enabled the manufacturer to extend the sale of his boilers without interfering with those steam fitters who required no assistance. It is contended that, in some instances, a doubtful benefit has been secured by the tradesmen who have been induced to take up steam and hot water heating and install a plant on the plans designed by the manufacturers' salesmen and based on the estimate of cost which he has prepared. This doubtful benefit, unfortunately, extends to the competent steam fitter, inasmuch as it makes a price that is too low for doing work, and which has, moreover, an influence on all the work in the community. Now that the feelings of the steam fitters have been given expression, it is well for them to receive the consideration to which they are entitled. As the business world was never more careful than at present to give favorable consideration to reasonable objections made to prevailing customs, it is probable that no great friction will be developed in this particular branch of trade. It is to be hoped that the few contentions which exist in the plumbing trade may be as readily disposed of.

## Manufacturers and the Export Trade.

It is to foreign markets that American manufacturers turn as an outlet for their surplus productions in times of depression or dullness in the domestic trade. In this present period of "boom" conditions, when high prices are obtainable at home, a tendency exists to neglect the export business and cater solely to domestic customers. This is an unwise proceeding, for the time must inevitably arrive, sooner or later, when the swing back of the pendulum will bring down both prices and the volume of business. Then the foreign markets will again become objects of interest and attention. But if their cultivation has been neglected in the interval the fruit will not be so easily plucked. Eras of lower prices in the United States are obviously coincident with eras of expansion of the export trade. We had such an era



before the last wave of prosperity arrived. When we get in the trough of the commercial sea again the export trade will not only resume, but greatly increase its importance. It will also prevent what used to happen at the time of a depression, and it behooves manufacturers to keep the strongest possible grip on it and not be tempted by big domestic prices into entirely letting it go for the time. It is a wise precaution to hold what good trade they have even at the expense of some profit. Then they can expand it when the home market fails them, aided greatly by the fact that they have kept the trade alive by furnishing partial quantities, if unable to fully execute all orders.

### The Demand for Bright Young Men.

The activity manifested in all branches of manufacturing business and among mechanical tradesmen is such as to require the utmost efforts of all the talent already available in established business concerns. The readers of *The Metal Worker* are more particularly interested in the demand for young men of good education and thorough training in special branches of engineering. The demand is greater than ever before for high class pattern cutters, who may never be called upon to handle the mallet and shears, but who can take the architect's drawings, work out the design and draw the patterns for the work. In the plumbing trade there is opportunity for young men who have made a study of the engineering side of this trade and are masters of the principles and details involved in the installation of modern and high class plumbing systems. These men are needed both for superintending the installation of such work and for meeting architects and builders from whom work is solicited, as well as for preparing the estimates and plans of the work to be installed. In the heating trade, whether in the furnace, steam or ventilating branches, men who have made a study of this science and are capable of figuring the requirements of any class of building and of designing the apparatus needed in it, and who are also capable not only of superintending the installation of the plants, but also of meeting those who have need of such work and securing their orders through thorough explanation of the requirements, are being sought after in all of the large business centers. The opportunities offered to young men at the present time far surpass those that were open a quarter of a century ago. To-day, through the agency of correspondence schools, a young man may take up any branch of trade and systematically and thoroughly master it by mail, whether he be located in a large center, where public libraries are available to him, or in the most remote rural district. Those who are more fortunate and can attend one of the schools of technology naturally enjoy better facilities for qualifying themselves for the work that they may select. It is well for the young man to learn early that it is not enough to be able to do the work, but that his success in life depends on a thorough understanding of the basis on which each part is designed and proportioned. Any work that may come under his notice should receive his careful attention and analysis, so that it can readily be called to mind and the experience be utilized in the designing of similar work. Technical training and knowledge consists in the systematic arrangement of varied experience so that it can be readily referred to. The young man who cultivates a retentive mind, who is a persistent seeker after the cause for every effect and a student of the text books and available literature on the branch in which he is most interested, is preparing in a manner which will lead to certain

success in obtaining a position that will be profitable and useful, whether in the management of his own business or in the employ of some already established business concern.

### Phase of Western Building Situation.

One phase of the building situation as it has prevailed, particularly in the West, is worthy of note, and it has never been more remarkable than during the present season—that is, the weather. Rarely, if ever, has the contractor been compelled to submit to such unfavorable conditions as have prevailed throughout the present season and in all sections of the country, says a writer in *Construction News*. Truly the elements have been against him. Work that was put in early in the season upon the most carefully calculated plans fell down on account of the heavy fall of rain, not only to the embarrassment of the man who designed it but to the cost of the owner and contractor, none of whom were to blame. Instances of this sort multiplied all over the country to such an extent that the aggregate of loss must by this time be considerable. Not so expensive from the contractor's standpoint, but more so from that of the owner, have been the temporary delays in the beginning of work, but it is to be hoped that the end of the unpleasant weather has been reached and that henceforth the path will be clear of such obstructions.

Charles D. Walcott, director of the United States Geological Survey, has issued the annual mineral chart showing the mineral products of the United States from 1892 to 1901 inclusive. This chart is issued in addition to the "Report on the Mineral Resources of the United States, 1901," which will be ready for distribution in the fall. The statistical summary of the mineral products of the country for the calendar year 1901 shows, for the entire country, a grand total of \$1,092,224,380 as the value of minerals produced in 1901, as against \$1,064,408,321 in 1900. This comprises \$566,351,000 worth of nonmetallic mineral products and \$525,873,280 of metallic products. The value of pig iron is placed at \$242,174,000, copper at \$86,629,266, lead at \$23,280,200, zinc at \$11,265,760 and aluminum at \$12,238,000. The value of bituminous coal mined in 1901 is placed at \$236,201,899, anthracite coal at \$112,504,020, petroleum at \$66,417,335 and natural gas at \$27,067,500. The total value of the mineral products of the United States has increased from \$369,319,000 in the calendar year 1880 to nearly \$1,100,000,000 in 1901. The increase has been steadily progressing throughout the 21 years intervening between those dates.

The municipal authorities of San Francisco, Cal., are again agitating the question of limiting the height of tall buildings. At present there is an ordinance of the Board of Supervisors which limits the height of Class A buildings on streets 100 feet in width to 125 feet. The height of Class B buildings on all streets is limited to 80 feet and of Class C buildings to 75 feet. It is now proposed to increase the limit from 125 to 130 feet on streets 100 feet or more in width, and to allow a height of 95 feet on all streets less than 100 feet in width.

The increasing use of oil for fuel on the Pacific Coast is having a depressing effect on the coal trade of British Columbia. A press dispatch from Vancouver reports the closing of important mines at Nanaimo, the men being advised to look for employment elsewhere. Vessels long engaged in transporting coal to San Francisco have been laid off.

United States Consul-General Robert P. Skinner of Marseilles, France, reports that the National Colonial Institute in that city has received notice that important deposits of mica have recently been discovered in French Guinea. Samples of this mica, which are at the Colonial Museum, are said to show that the material is of first-class quality.



## The Pig Iron Situation.

We have been asked by so many stove manufacturers for our opinion as to whether this is a good time to buy iron or not, that we have come to the conclusion to answer such inquiries in the form of a statement of existing conditions and influences. They may then draw their own inferences and use their own judgment. Transactions in foundry pig iron have been unusually heavy for some considerable time, and large contracts are known to have been placed for the delivery of pig iron extending through the first half of 1903. These contracts have been made mainly by heavy consumers of pig iron who are in the habit of covering their estimated requirements for a considerable time ahead. This is their practice whether the market is advancing or declining. They are compelled by the peculiar conditions of their business to provide a definite supply on which they can rely, but it is probable that they have bought more heavily at this juncture than usual, partly because pig iron has for some time been quite scarce and partly because the outlook is so favorable for general business. The rank and file of the foundry trade do not ordinarily make purchases covering their necessities so far in the future. They are apt, however, to follow the example set by the heavy consumers and in times of scarcity or advancing prices they will also make purchases for extended deliveries. The transactions of the past few weeks have undoubtedly included many contracts made by the smaller foundrymen. It is understood that quite a number of the leading stove manufacturers have been among those who have placed long time contracts. The persistent announcement that furnace after furnace has thus disposed of its product for several months in 1903 may well make those foundrymen do a little hard thinking who have not yet bought any iron for next year.

For the purpose of correctly understanding existing conditions in the pig iron trade, it will be well to inquire into the cause of the present great scarcity of foundry pig iron. This scarcity is primarily due to the strikes of coal miners in the anthracite region of Pennsylvania and in quite a number of bituminous districts in some portions of Pennsylvania, West Virginia, Virginia and further South. While the quantity of pig iron produced with anthracite as a fuel is not very heavy, yet nearly all of the iron so produced is of foundry grade and its restriction thus directly affects foundrymen. The strikes of bituminous coal miners have to quite an extent interfered with the production of coke. It happens, therefore, that even if all the furnaces using anthracite had been able at once to turn to coke as a substitute the coke necessary for this purpose was not available. The diversion of anthracite users to coke came at a time when the coke production, instead of being increased to meet this demand, was being restricted by the bituminous miners' strikes. In addition to the trouble caused by miners' strikes, the movement of coke from the great Connellsville coke region has been seriously handicapped by the shortage of cars and motive power. It is estimated by *The Iron Age* that the troubles due to the coal miners' strikes in the North and South caused a falling off in July of fully 75,000 tons from the normal output of pig iron, nearly all of which fell upon the foundry branch of the industry. The deficiency in the domestic supply of foundry pig iron has to a considerable extent been met by the importation of pig iron. The importations are now running up to quite a figure and in some localities along the Atlantic Coast Scotch, English and German pig iron have established the price for quick shipment and ruled the market. In the meantime the consumption of pig iron has continued on a tremendous scale. The quantity of iron melted in this country is in excess of anything ever known, and the very prosperous condition of the country seems to warrant the belief that this consumption will continue indefinitely. The steel trade is so active that it has to some extent encroached on the furnace capacity which, in ordinary times, would be available for the requirements of the foundry trade. This is observed in some sections of the North and to quite an extent in the

South, where furnaces are now producing basic iron for steel making purposes, which ordinarily would be run on foundry iron. The restriction of output caused by the scarcity of furnace fuel, together with the heavy consumption, has caused a sharp premium to be paid on foundry pig iron for delivery during the remaining months of this year. The contracts being placed for next year are being made at figures which seem reasonable compared with the premium pig iron, but at the same time they are very considerably higher than those prevailing at the opening of the present year. Those who are placing contracts are therefore putting themselves in a position to greatly increase their manufacturing costs. This is what impels numerous foundrymen to hesitate before taking steps to contract for such iron as they may need during the opening months of next year.

The consumer of pig iron who has these facts in mind and is confronted with the desirability of determining what to do has several points to consider. One of these is that the cause which has contributed so greatly to the scarcity of foundry pig iron is not of a permanent character, but is at any day likely to change into an influence having the opposite result. The strike of the anthracite coal miners, having continued for three and a half months, can certainly not be expected to run much longer. The bituminous miners' strikes are gradually coming to an end. As soon as announcement is made that these strikes are settled, or that all coal operators have actively resumed the mining of coal, a feeling of relief will spread through the trade and consumers of iron will anticipate a more abundant supply. Sentiment governs the feelings of business men just as it governs mankind generally. It will not be necessary to see shipments of pig iron immediately increasing, but those who have been fearing still greater scarcity will cease to be apprehensive and those who have been endeavoring to increase their supply will no longer be so ardent in pursuit of iron. With a slackening in the sharp inquiry will come a condition of more ease in the iron market. If, at the same time, the importations continue in as large a volume as recently, the supply will probably soon be found adequate to all the requirements of the foundry trade. Another influence which must be borne in mind is the fact that during periods of scarcity like the present consumers seek a supply in various directions. Their inquiries are not confined to one commission house or furnace company, but extend to a number of them. If a furnace company should fail to deliver iron contracted for, and purchases are made elsewhere, the original company will still be held to the contract to furnish the iron, and these contracts form a reserve in the supply to be drawn upon after conditions relax and the production of pig iron is proceeding on a normal basis. Consumers of pig iron, therefore, who have contracts at low prices on which they are receiving no iron will confidently expect to secure shipments on such contracts after the miners' strikes are over and the iron trade is again in a normal condition.

It has been assumed by many individuals that such important additions to furnace capacity are now in progress that at an early day a much more plentiful supply of foundry pig iron will be available. The relief from this source will not be so great as supposed. By far the larger part of the new furnace capacity coming in will be for steel making pig. The new capacity which will be available for foundry pig iron is comparatively small. Should the steel trade slacken, some of the furnace capacity now given over to basic pig iron will be diverted to the foundry trade. But the great hope of the country, so far as foundrymen are concerned, is in a speedy end of troubles among the coal miners and a resumption of full activity by the furnaces devoted especially to the foundry trade.

A. W. WAGNER, Chicago manager for Stowell Mfg. & Foundry Company, South Milwaukee, Wis., has resigned, his resignation taking effect Aug. 12. Mr. Wagner is making arrangements to enter the manufacturing field and will shortly issue an announcement to the trade outlining his plans.



## NOMINATIONS FOR STOVE CAPTAINS.

Evidently the suggestion made by a correspondent in *The Metal Worker* of August 16 has attracted some attention. That interest is taken in the idea by the stove trade is testified by the following communication from a stove manufacturer who has been identified with the trade for more than a quarter of a century:

I noticed in *The Metal Worker* of August 16 an article under the heading, "Again the Stove Captain." There are several men in the stove business who could successfully manage a stove combine. G. B. Gunderson of the Detroit Stove Works has surely demonstrated his ability in bringing to the front the concern which he manages financially. George H. Barbour of the Michigan Stove Company, or J. W. Van Cleave of the Buck Stove & Range Company, would make first-class captains. Either of these stove men has the ability to map out a plan which would make a stove combine a great success.

## STOVES, FUEL AND CAPTAINS.

BY M. D.

Your recent editorial on "Stoves and Fuel" does not give as much consideration to one character of fuel as it is entitled to receive, and I would call your attention to natural gas. The daily papers have recently given accounts of a movement among the companies controlling natural gas fields in the Central West to combine in one large company for the purpose of making the natural gas fuel available for domestic purposes in cities where heretofore it has been popular and where the supply has either failed or become unsatisfactory through being intermittent in service.

There can be no doubt that the use of natural gas in hot air furnaces has increased their capacity through the evenness of the temperature. The question comes up, however, what about the cost of gas fuel used in coal burning apparatus? Are they not far heavier than is necessary and, consequently, is not much fuel wasted when used in them? In the vicinity of Pittsburgh coal burning ranges and furnaces of the cast iron type are being displaced to a certain extent by sheet metal constructions for burning gases. One concern claim to have sold over 2000 gas ranges of a single pattern of steel construction in the vicinity of Pittsburgh, and another concern report a continually increasing business. The coal strikes and the convenience of the gas fuel, notwithstanding that the supply has fallen off in some districts, have given the general public a taste of the convenience of such fuel and has made the opportunity for the exploiting of something less laborious and dirty in its use than the universal coal fuel.

On considering this there comes up in my mind the possible effect on the general stove and furnace business. I firmly believe that oil and fuel gas are rapidly coming to the front, and that the foundry made stoves will suffer in the East as well as in the West from the competition with sheet metal constructed gas stoves and heaters. If my calculations are correct, the discussion in reference to a "stove captain" would seem to indicate that he is necessary for the general good of the stove and foundry interest. A man who could execute a flank movement and get a good share of the sheet metal trade for his combination would be a worthy captain. If such a man should be found and chosen for the work, I would be glad to submit a plan for his consideration.

## THE PENINSULAR SLACK BURNERS.

Owing to the scarcity of anthracite coal, a wider interest in the retort Peninsulars, manufactured by the Peninsular Stove Company of Detroit, Chicago and New York, will be taken by the trade. These stoves are designed to be smoke consuming, having a hot blast tube down the center. They are adapted for burning hard or any grade of soft coal and can be used for burning wood. The broken view, Fig. 1, shows the Retort Pen-

insular, which resembles the popular oak stove in appearance. The castings are of suitable design and the appearance is improved by the use of nickel ash hearth, a nickel foot rail, a combination panel and tea pot stand, a top ring and a top ornament. At the top of the stove



*The Peninsular Slack Burners.—Fig. 1.—Broken View, Showing Construction of Retort Peninsular.*

is a combination swing and lift feed door, large enough to permit the entrance of large lumps of coal and knotty chunks of wood. At one side of the stove is a damper for regulating the amount of air which is brought to the surface of the fire by means of the hot blast tube by



*Fig. 2.—Broken View of Parlor Peninsular.*

supplying the combustion chamber with a continuous current of heated air, so that both the gases and the free carbon rising from the heated fuel are consumed without the production of smoke and with the effect of a substantial economy and increase in heating capacity. The fire is carried in a heavy cast iron fire pot.



made double to allow for expansion and contraction, the upper section being composed of steel to protect the outer body of polished steel from the effect of the intense heat.

This polished steel affords a pleasing contrast with the castings and is said to require no blacking. The angle of the fire pot and the deflecting ring at the top both have the effect of throwing the radiant heat down upon the floor, insuring strong heating power where it is most needed.

The Parlor Peninsular, shown in Fig. 2, is of a handsome finish, owing to the fire pot being concealed within the polished steel body. The grate is supported on substantial standards and is not likely to warp. The fire pot is heavy, made in sections and arranged to thoroughly protect the outer body. The ash pit has a large swing door fitted with an air tight draft register. This stove is also provided with a large feed door and with a damper arrangement at the top to regulate the air supply to the hot blast. Another feature is the use of flanges at both the top and the bottom to secure an air tight construction, so that the combustion can be perfectly controlled.

The stove shown in Fig. 1 is made in five sizes, having fire pots 12, 14, 16, 18 and 20 inches in diameter, while the stove shown in Fig. 2 is made in three sizes with fire pots 12½, 14½ and 17 inches in diameter. The company issue a four-page circular fully describing the features and details of these stoves.

### Charter Oak Stoves and Ranges.

We have received from the Charter Oak Stove & Range Company of St. Louis, Mo., a copy of their new catalogue of stoves, ranges and heaters, covering the season of 1902-1903. It is an attractive volume of 188 pages, printed on paper of a delicate shade of pink, which forms a striking contrast with the well executed engravings in black which are employed throughout the work. The binding is in flexible covers of a neat floral design, in connection with which appears the name and address of the company, together with a *fac-simile* of their trade-mark. The frontispiece is a bird's eye view of the company's works, which cover more than two city blocks, or an area of over 5½ acres, and give employment to over 500 men. Among the opening pages is an index alphabetically arranged, a statement of terms, discounts, &c., and an enumeration of some of the strong points and advantages of the company's steel ranges. These cover the construction and material of the body of the stove, the oven, the fire box, the damper, the grate, the pouch feed and the key plate top.

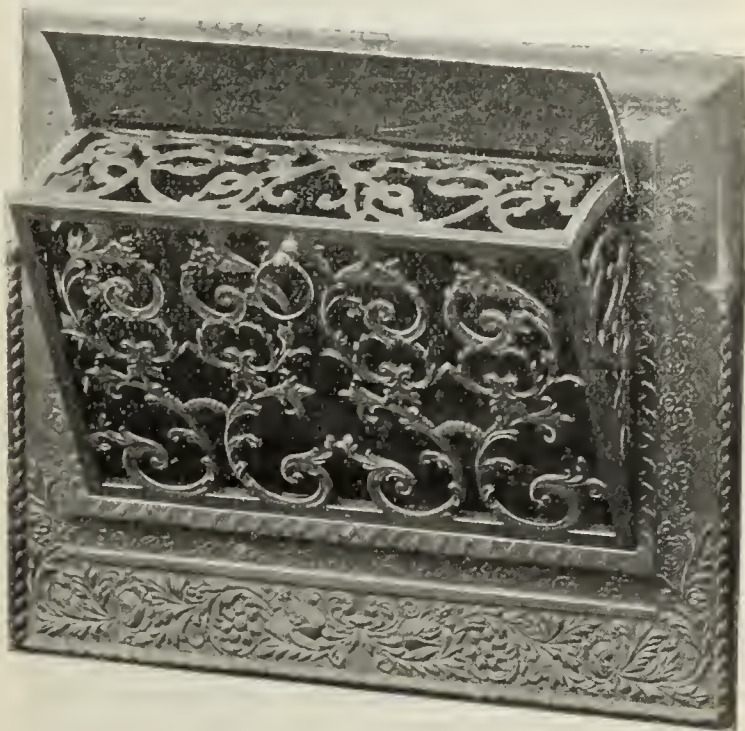
The leading place in the catalogue is given to the Grand Charter Oak, a cast range for using soft or hard coal and also made for burning wood as a fuel. The company make a line of cook stoves under the same name, several of the varieties being presented. The Charter Oak, the New Glory, the Beauty and the Bright steel ranges are next in order, the last two having an aluminum finish. Steel cook stoves are then considered, these in turn being followed by an extensive assortment of cast goods. Special attention is given to a varied line of hotel ranges and stoves constructed of wrought steel, also steam tables, charcoal broilers, hotel laundry stoves, carving tables, sand ovens, &c. The cook stoves and ranges occupy more than 100 pages of the volume, the latter half being devoted to heating stoves, of which the Royal Charter Oak base burner for hard coal occupies the leading place. This is made in three sizes and is ornamented in a rich and effective manner, nickel playing an important part in the decoration. Another handsome construction is the Charter Oak air tight heater for soft coal, made in three sizes. The fire pot and dome are solid castings, extra heavy, firmly bolted together and surrounded by an ornamental open casing making the stove equal to a small furnace. Important features of the construction are shown by means of separate engravings.

An extensive line of oak, globe, cannon, todd, box, laundry and air tight stoves are also illustrated and

described. The closing pages are given up to Charter oak furnaces, farmers' boilers, grates, stove hollow ware and miscellaneous goods.

### THE IDEAL WARM AIR REGISTER.

A warm air register which is made exclusively for the side walls of rooms is being introduced to the trade by the Ideal Register Company, 129 and 131 West Woodbridge street, Detroit, Mich., under the name Ideal. It is ornamental in character, is referred to as being fire proof, is so constructed that it will not at once become discolored by use, has an adjustable valve, and the register can be used in any width partition. This is especially desirable when it is necessary to place a register in a partition used for sliding doors. The working parts are made of cold rolled steel, stamped, and are claimed to be unbreakable. The border, or wall frame, is dust tight and the register can be placed after the carpenter work is finished, thus avoiding the neces-



*The Ideal Warm Air Register.*

sity of waiting for other workmen. Two registers may be placed opposite in a partition and the arrangement is such that the base board abuts the wall frames. In the accompanying illustration we show the register in position and fully open. It will be seen that the grille surface admits of a large increase of warm air, while the register fully protects the wall from discoloration by providing an ornamental shield, which deflects the current of air out into the room. The shield, or deflector, can be closed when desired, thus protecting the ornamental grille and preventing dust from settling in the register box. It can be closed to any degree required and is practically noiseless. In order to open the register the grille work moves outward from the top and the valve moves inward from the bottom, dividing the air in the wall pipe at any degree desired. The register can be used as a convenient foot rest, and when such use is made of it a small catch at the top of the register prevents its closing. The company point out that this register deflects the air easily, has no parts to become worn out or to get out of order, and that it is more quickly and easily fastened to the wall than registers as ordinarily constructed. The second floor registers carry out the same general effect in design, without interfering with the second floor pipe.

C. C. HEATH & Co., Philadelphia and Baltimore, have taken the sole sales distributing agency for the entire output of the Raymond Mfg. Company of Middletown, Pa., comprising, among other goods, the Grand Perfect line of Ranges, Grand Susquehanna Cooks, Art Perfect Heaters, Conqueror Furnaces and their entire line of Stove Repairs.



## EASTERN HOUSEHOLDERS AND SOFT COAL.

The prolongation of the strike of the anthracite coal miners far beyond the anticipation of the public is causing much anxiety among Eastern householders, who fear they may be compelled by the scarcity or high price of anthracite to use bituminous coal. Officials of the anthracite mining companies are endeavoring to allay apprehension by assurances that the strike will end ere long and that the regular prices will prevail as soon as coal begins to be rushed to market.

This is welcome news, but meanwhile the strike goes on and householders are making inquiries about soft coal. The *New York Herald* for August 20 published an interesting article on the coal situation in which this phase of it was discussed. William Corry, manager of the Stove Manufacturers' Repair Association, 230 Water street, New York, was among those interviewed, and his remarks are quoted as follows:

Few flues and chimneys are constructed for the use of soft coal, but householders may be able to use it with some discomfort. There will be little or no trouble with the grates; but, to use soft coal, chimneys should be roomy to accommodate the larger volume of smoke, and the flues larger than for anthracite. Out West the stoves are specially constructed for both kinds of coal.

There will be trying times in thousands of houses when attempts are made next month to heat and cook with soft coal. Flues will speedily clog and the smoke will spread back into the rooms. Furnaces downstairs will use the stairways for chimneys and the servants will find it impossible to keep fires overnight.

Poor people will have to get along with soft coal if the present high prices continue, but I would advise those who can afford it to try no experiments and pay the price for anthracite, no matter what it may be.

## Superior Stoves and Heaters.

The 136-page catalogue which has just been issued by the Bridge & Beach Mfg. Company, South First street, St. Louis, Mo., marks the sixty-sixth year of their continued success in the manufacture of stoves, ranges and heaters. The volume is neatly printed upon a good quality of paper, is profusely illustrated with well executed engravings, some of which are half-tone reproductions from photographs of the finished goods, and the binding is in flexible covers with embossed side title. A double page illustration of the company's foundry, offices and salesroom, together with general views of of their offices and warehouses in San Francisco, Portland, Denver, Spokane and Los Angeles, constitute features of the opening pages.

The goods illustrated and described are offered under the generic name Superior and embody features which cannot fail to command the attention of the trade. The Superior steel range is first considered, this being shown in japan finish and also in aluminum finish, the latter giving very rich effects. The Mohawk steel range, intended for using coal or wood, is offered in a number of styles and sizes, after which is the Superior steel cook, embodying the modern improvements. An extensive line of cast cook stoves and ranges are then considered, these occupying nearly 90 pages of the catalogue. Among the heaters attention is first invited to the Superior radiator, which is shown in regular finish and also in what the makers designate as "high finish," the latter involving a more elaborate use of nickel. The Superior hot blast, with exposed fire pot, is another pattern likely to interest the trade, embodying as it does many taking features. Cheaper lines of heaters occupy the closing pages, together with suggestions about operating stoves, ordering repairs, &c. Not the least important feature is a code index, alphabetically arranged; also a general index, in which the kinds of stoves, ranges and heaters are classified.

THE Stove dealers of Terre Haute, Ind., have recently been complaining that Township Trustee Fisbeck has been buying Stoves outside of the city without asking for bids from the home dealers. In defense of his position Mr. Fisbeck states that he desired a special make of Stoves which the home dealers did not handle, but they in turn fail to understand why he did not ask them about it before buying elsewhere.

## ODD PLATES.

THE CHAMPION OIL BURNER COMPANY, 63 Mueller avenue, Cleveland, Ohio, are sending to the trade circulars explaining the use and application of their Champion Oil Burner, which is designed for use in the fire chambers of cooking stoves and ranges. This Burner is arranged to be supplied by gravity with oil from a tank set about 2 feet above the stove. The Burner is of a size and shape that it can be readily placed in the fire chamber of the stove, and the heat generated is sufficient not only to heat the water in a water back or in a reservoir at the back of the Stove but to do the cooking on the top of the stove and also for baking. This Burner, which has been on the market for some time, is made in several sizes for cooking stoves and also for hot air furnaces. The oil on entering the Burner comes in contact with a hot generator, transforming it into a gas which burns at a very intense heat. It is claimed that its operation and care are so simple that the ordinary house servants can use it with safety and satisfaction.

DOE-WAH-JACK, the Indian who presides over the destinies of the Round Oak Stoves manufactured by the Estate of P. D. Beckwith, Dowagiac, Mich., was a conspicuous figure at the convention of the Michigan Retail Hardware Dealers' Association in Detroit last week, and he held a reception in one of the private parlors of the Cadillac Hotel. In his wigwam was smoked the pipe of peace and all braves of visiting tribes were presented with a souvenir match box, one side of which was adorned with the chief's picture and the other with an illustration of the Round Oak Stoves. J. O. Becraft and W. T. Leckie stood sponsors for Doe-Wah-Jack. A huge bouquet on the desk of the presiding officer bore testimony to their thoughtfulness.

THE TUTTLE-ALLEN STOVE COMPANY have decided to remove their plant from St. Joseph to Kansas City, Mo., a lease having been taken of the premises at 305 Delaware street. The concern are incorporated under the laws of the State of Missouri for the manufacture of Steel Ranges and Cook Stoves. W. F. Allen of Superior, Neb., is the president, and F. C. Tuttle is secretary and treasurer. For 19 years the latter was with the Great Western Stove Company of Leavenworth, Kans., and two years ago he took the management of the Western branch of the H. Wetter Mfg. Company, at St. Joseph, Mo., afterward organizing the Tuttle-Allen Stove Company.

THE WEIR STOVE COMPANY, Weir, Mass., resumed operations in their molding department on Thursday, August 14, and in their mounting shops on the following day.

THE BAXTER STOVE COMPANY, Mansfield, Ohio, closed their works August 11 in honor of the opening of the carnival of the Knights of Pythias in that place.

THE CORNING STOVE WORKS, Corning, N. Y., resumed operations August 11 after a brief shut down.

WE understand that the Western branch of the H. Wetter Mfg. Company is about to be moved from St. Joseph to Kansas City, Mo.

THE INDEPENDENT REGISTER COMPANY, Cleveland, Ohio, in a little pamphlet which they have issued, tell how to heat a room without cost for fuel. They point out that this is accomplished by the use of their Independent Stove Pipe Radiator, which is used as a substitute for a section of stove pipe. The device can be used in a variety of ways, and by means of it much of the heat which usually escapes through the chimney is utilized. One form of Radiator is intended for use in connection with any fuel, except soft coal, while another is designed especially for soft coal.

A. T. NYE & SON COMPANY of Marietta, Ohio, manufacturers of the Royal Leader Stoves and Ranges, report that they are extremely busy making fall shipments. In addition to the extensive improvements made in their plant last year they are now adding a new power house and installing a 100-horse-power boiler and a new electric generator for lighting their plant.

THE MICHIGAN STOVE COMPANY are furnishing customers handling their goods with water proof Garland



signs. They consist of cards measuring about 10 inches square and upon them, printed in colors, is the Garland trade-mark. These signs are intended to be tacked on telegraph poles, fences or other outdoor places where they will be conspicuous.

THE SHELBY STOVE COMPANY, Shelby, Ohio, are remodeling and enlarging their plant in order to keep up with the demands of their rapidly growing trade. We understand that a number of new buildings will be constructed and the force of hands will be increased by 75 to 100 men. New machinery is being installed and the work is being pushed as rapidly as possible. It is hoped that the plant will be running full capacity in the course of a few weeks.

WE have received from F. D. Woodruff, 142 Michigan street, Chicago, illustrated circulars descriptive of a Heater which he has just brought out. The Heater is named the Grate-Spiral, and has a number of interesting features.

THE MARCH-BROWNBAC COMPANY, Pottstown, Pa., are reaping the benefit of the interest that their new construction, the Crown Low Down Hot Air Furnace, is creating among the heating trade.

OWING to the coal question, increased interest will be taken in the Bay State Wood Furnace made by the Barstow Stove Company, Providence, R. I., which is well adapted for burning trash wood or other available fuel.

IN another column a view is presented of the plant where the Acme Oven Thermometers are made by the Evans Stamping & Plating Company, Taunton, Mass., which gives evidence of their facilities to supply all orders promptly.

THE SMITH & ANTHONY COMPANY, Boston, Mass., are bringing to the attention of the trade the Monarch Hub Range, specially adapted for bulldozers' use.

THE success that has attended the use of the Cole Air Tight Heaters for wood, made by the Cole Mfg. Company, Chicago, Ill., is assured in Cole's Original Hot Blast for burning all grades of soft coal, and which is already in demand where hard coal is scarce and high.

GEORGE H. BARBOUR, vice-president and general manager of the Michigan Stove Company, Detroit, is enjoying a brief vacation at Watch Hill, R. I., preparatory to the active work of the fall campaign.

A BLOTTER sent to the Gas Stove trade by the H. Adler Company, Pittsburgh, Pa., refers to the old foggy way of making Gas Stoves in a pleasant manner that will be sure to attract attention to their Acme and Iona line of Gas Goods and secure applications for their catalogue 36 devoted to them.

THE ROYAL LEADER, which is made by the A. T. Nye & Son Company of Marietta, Ohio, is offered with and without reservoir, and in either Range or Cook Stove form as may be desired. It has four boiler holes in the top surface and is ornamented in a neat and effective manner. The manufacturers state that the 100 per cent. increase in their business is ample evidence of the fact that their goods are meeting with success.

THE GRAFF FURNACE COMPANY, 208 Water street, New York City, in referring to the merits of their Hero Furnace, claim that it is so constructed as to do the work required of it in an economical manner; that it is durable and that the satisfaction which it is and has been giving makes friends for them. The catalogue which the company have issued sets forth the merits of their Furnace, and gives an idea of the varied line they manufacture.

THE Tremont Hot Blast Oak Stove is referred to by the Pittsburgh Stove & Range Company of Pittsburgh, Pa., as a successful soft coal self feeder which will burn anything. It is offered as a surface burner, or as a self feeder, as well as a single or double heater. The magazine for soft coal has a force feed, and while the fire supplies the power the shape of the magazine applies it. The company refer to the Stove as being "neither a freak nor a suspicious character;" that it has seven years of phenomenal success to its credit and is sold with the guarantee of their name and the mark of public approval. The Stove is simple in its construction,

having no complex mechanism, and the company claim that anybody who can cut kindling wood, strike a match and lift a coal hod, can run it.

THE AMERICAN FURNACE COMPANY, 1911 and 1913 Pine street, St. Louis, Mo., state that whereas they formerly lined the fire pot of their American Furnace with cast iron, which cracked and warped, they now use fire brick and will guarantee it for five years. The Furnace is made strong in places where experience has shown other heaters to have proven weak, and it will burn any kind of fuel. It is made of heavy steel and riveted tight like a boiler. The large radiators are easy to clean, and the fire brick lining of the fire pot can be replaced through the fire door.

THE FOREST CITY FOUNDRY & MFG. COMPANY, Cleveland, Ohio, call attention to the Monarch Air Blast Furnace, which they are offering and which embodies features of construction likely to interest the trade. The catalogue for 1902 sets forth the merits of their goods.

THE JOLIET STOVE WORKS, Joliet, Ill., have made a practice of furnishing dealers handling their goods with an attractive sign intended to project over the sidewalk and sustained by an ornamental iron bracket. The inscription upon the sign tells that "The Original Air Tight Heater Will Keep You Warm." The company point out that travelers will see this sign in front of the stores of prominent merchants wherever they go, and that the sign is one which the dealers will find draws trade.

THE PECK-WILLIAMSON COMPANY, Cincinnati, Ohio, intimate that dealers can largely increase their trade by handling the Peck-Williamson Underfeed Furnace by reason of the merits of the heater. Reference is made to the economical consumption of fuel, and to the fact that heat which is ordinarily allowed to escape to the chimney is utilized in a way to produce the most satisfactory results. An attractive booklet which the company have issued tells all about this Heater, and it is intimated that no one can read it without understanding that the Peck-Williamson Underfeed Furnace will burn less fuel, radiate more heat and keep the house warmer than any other.

### A Retail Hardware Consolidation.

An advertisement is noted in an Oil City paper of application to be made to the Governor of Pennsylvania for a charter for an intended corporation. An inquiry of one of the officials of the proposed combination elicited the information that the intended corporation are to be known as the United Hardware & Supply Company, the purpose of which will be to deal in hardware and supplies in the various cities in that section. Their capital, as stated in the application, will be \$500,000. Among the subscribers to the capital stock are Joseph Seep and S. S. Bryan of Titusville, Charles J. Kirk of New Castle and Eugene and Arthur Seep of Oil City. It is the intention of the proposed combination to acquire the stores of S. S. Bryan, Titusville; Kirk & Smith Company, New Castle, and Seep Bros. of Oil City. The object of this consolidation is to effect an economy in management and purchases, and to distribute merchandise at minimum cost.

The president of the new organization will be Chas. J. Kirk of New Castle, for over 20 years identified with the leading hardware business of that city. The treasurer will be S. S. Bryan of Titusville, who has been in the hardware business in Titusville for nearly 20 years, and before that was with a large jobbing house in Pittsburgh.

S. S. Bryan, who is the originator of this proposed combination, is well known by the hardware trade throughout the country as having been active in the formation of the first National Retail Hardware Dealers' Association. It is nearly 25 years since he started in business, having received his early business education in the wholesale hardware house of the Logan-Gregg Hardware Company of Pittsburgh. Joseph Seep, one of the directors, is a millionaire and a Standard Oil Company official. He is a director of the Seaboard National Bank, New York, and many other large financial and manufacturing companies.



## MICHIGAN RETAIL HARDWARE DEALERS' ASSOCIATION.

In our last issue brief reference was made to the eighth annual convention of the Michigan Retail Hardware Dealers' Association, which was held at the Cadillac Hotel, Detroit, on Wednesday and Thursday, August 13 and 14. President H. C. Minnie called the convention to order on Wednesday morning and announced the appointment of the following committees:

COMMITTEE ON CREDENTIALS: C. E. Pipp, Otsego; Chas. Harris, Detroit; A. J. Scott, Marine City.

COMMITTEE ON RESOLUTIONS: J. J. Potter, Alpena; F. McLean, Jackson; E. D. Foote, Flint.

COMMITTEE ON CONSTITUTION AND BY-LAWS: E. S. Roe, Buchanan; J. B. Sperry, Port Huron; F. Brockett, Battle Creek.

SPECIAL COMMITTEE TO DRAFT RESOLUTIONS UPON THE DEATH OF SENATOR McMILLAN: Henry C. Weber, Detroit; T. Frank Ireland, Belding; G. E. Bishop, Dowagiac.

On assembling in the afternoon the special committee appointed to draft resolutions upon the death of United States Senator James McMillan, gave in their report and mentioned that the late Senator had at one time been actively engaged in the hardware business. The resolutions were ordered placed upon the minutes. The convention then went into executive session.

Secretary Weber read a communication from Detroit manufacturers and jobbers inviting the members to participate in a boat ride to St. Clair River and Flats, with supper at the Old Club. The invitation was extended in behalf of the following concerns: Acme White Lead & Color Works, Art Stove Company, Boydell Bros., Buhl Sons Company, Detroit Stove Works, Fletcher Hardware Company, Freeman, Delamater & Co., Edward Frohlick Glass Company, Michigan Stove Company, Peninsular Stove Company, Pittsburgh Plate Glass Company, William Reid, Standart Brothers Company.

After the annual address of President Minnie, Treasurer Weber read his annual report, showing balance on hand a year ago of \$222.19. Receipts for the year were \$577.21 and disbursements \$410.34, leaving a balance in the treasury at the present time of \$390.06. Secretary Weber's report, which was accepted and adopted, showed a very satisfactory condition of affairs in the association with increasing membership.

### Papers.

A paper upon "Organization, General and Local" was read by A. Harshaw of Delray. President Minnie announced the appointment of Charles Harris as sergeant-at-arms. A paper on "Would Mutual Fire Insurance Benefit Our Organization?" by John Popp of Saginaw, proved of unusual interest, and was followed by a warm discussion, participated in by a number of members. Among others, H. G. Cormick, president of the National Retail Hardware Dealers' Association, who was present, gave some instructive information in regard to what had been accomplished by mutual fire insurance companies in other States. Mr. Cormick was followed by Secretary Weber, who read a paper embodying some pertinent remarks on the subject of mutual fire insurance. Irving A. Sibley of South Bend, Ind., was also invited to contribute to the discussion, and gave an interesting address on the same subject. A. H. Whitney of Merrill, being absent, T. Frank Ireland read the paper that he had prepared on "My Faults in Business As Others See Them," which was followed by a discussion.

### THURSDAY.

The Thursday morning session was marked by the presence of Congressman William Alden Smith of Grand Rapids, who gave a congratulatory address. Mr. Smith was followed by a paper on "Best Methods of Conducting a Retail Hardware Store," by R. G. Chandler of Coldwater. Another paper by B. F. Schumacher of Ann Arbor on "A Retailer's Views of a Jobber Who Retails" proved one of the most interesting of the session, and was followed by warm discussions, which would have made the ears of any offending jobber ring.

At the Thursday afternoon session President Minnie announced that as the election of officers would be held, he had appointed Messrs. Weber of Detroit and Winchester of Jackson, a Committee on Nominations. H. G. Cormick, president of the National Association, was

then invited to address the association, which he did in a most acceptable manner. Hon. B. A. Nevins of Otsego, Mich., then spoke upon the subject "Each Viewing the Other; Consumer Versus Retailer." The paper disclosed a thorough acquaintance with business affairs and the trend of the forces which are at work in the social as well as in the business world. It was a close study of the subject, fortified by statistics.

### Question Box.

The Question Box proved a particularly interesting feature of the session. Among the questions were the following:

*Is it a fact that the catalogue houses are hurting the trade of the jobbers as much as they are the retailers? Should the jobbers assist the retailers against the catalogue house competition and the people who supply them?*

It developed in the discussion that followed that the effort which has been made to prevent manufacturers from selling direct to catalogue houses has met with considerable success, and that further progress was expected in the future. The sentiment was expressed that catalogue houses should be placed in the same category as large retailers and not treated as jobbers by manufacturers.

*Should we take a decided action this coming year to control the exclusive retailing of merchandise that usually belongs to a retail Hardware store, which can be done, no doubt, by concerted action?*

This subject had been covered by action previously taken by the convention, in that a circular is to be addressed to the jobbers indicating the line of action the retailers demand.

*How can we best avoid price cutting that is usually started by a competitor?*

The answer given was "by local organization." Mr. Popp of Saginaw was here called upon to explain the methods by which the local organization at Saginaw has proven unusually effective in eliminating ruinous competition and price cutting.

*Does this Association consider the advance in stoves warranted?*

The answer was that it seemed immaterial what the opinion of the retailer may be. The advance had been made by the manufacturer, and must be paid by the retailer.

*Is there any disadvantage in early closing?*

This question brought out the fact that a majority of the dealers who formerly kept open until 9 and 10, and even later, at night, now generally close at 6 and 7 in the evening, and have discovered no falling off in trade as a consequence.

*Is it practicable for manufacturers to establish a retail price on staples or a special line of goods?*

Discussion developed that few, if any, of the retailers had any objection to the practice referred to.

### Election of Officers.

The Nominating Committee, consisting of John Popp, Saginaw; J. B. Sperry, Port Huron; J. J. Potter, Alpena; G. E. Bishop, Dowagiac, and L. Whittenack, Tecumseh, recommended the following ticket for election:

PRESIDENT, T. Frank Ireland, Belding.

VICE-PRESIDENT, John Popp, Saginaw.

SECRETARY, A. J. Scott, Marine City.

TREASURER, H. C. Weber, Detroit.

EXECUTIVE COMMITTEE FOR TWO YEARS: J. B. Sperry, Port Huron; F. A. Turner, Caro; J. G. Patterson, Detroit; F. S. Carlton, Calumet; S. E. Hunt, Detroit.

As there was no opposition it was determined, upon motion, that the secretary cast the unanimous vote of the association for the various offices to be filled. The chair appointed Messrs. Weber and Winchester a committee to escort the newly elected officers to the platform. All the officers in turn were called upon for remarks, to which they responded gracefully.

Mr. Weber of Detroit pledged himself to be present and to be one of a number to bring in one new member at the next meeting of the association.

JAS. TOBIN has lately opened a store in Fond Du Lac, Wis., for the sale of Shelf and Heavy Hardware, Stoves and Tinware. The building has been fitted up at a cost of \$6000, and its arrangement is attractive and convenient. B. C. Blancher will manage the store.



## BOSTON MASTER PLUMBERS.

The annual outing of the Master Plumbers' Association of Boston and vicinity was held at the Bass Point House, at Nahant, last week and was attended by about 300 members and their families. The principal feature of the entertainment was the baseball match between the representatives of the supply houses and the master plumbers. The score, which was 7 to 4, reflects a sharp contest and a creditable victory to the supply house men. A shore dinner was served at 2 o'clock, and in the evening the athletic programme was completed. The 100 yard dash was won by Andrew Granara and the fat men's race by Mr. Gorman. The 100 yard dash for women was won by Miss S. O'Connell, the second prize being taken by Miss Ellen O'Connell, and the third prize by Miss Emma Shanahan. The mirth provoking feature of the outing was a three legged race, which was won by Maynard and Granara, the second prize being awarded to Cummins and Duffield. There were a number of other contests, and the entertainment continued until a late hour. The committee in charge consisted of Thomas J. Tute, John P. Drury, National Executive Committeeman David Craig and Thomas Gavin.

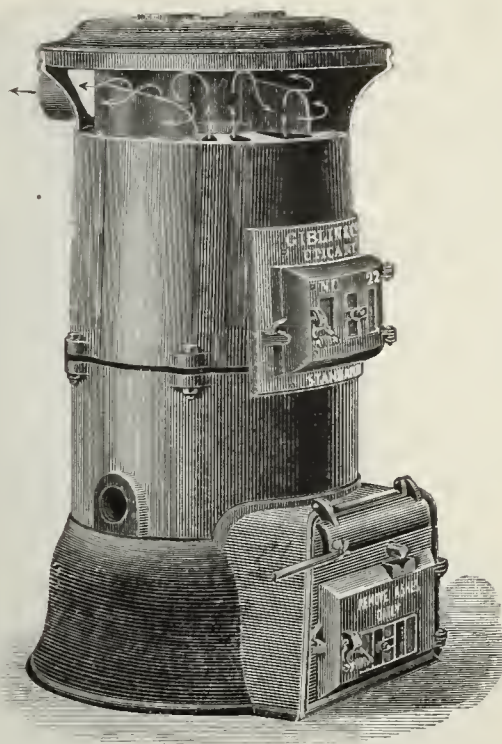
### Thomas Devlin & Co.

Thomas Devlin & Co., Philadelphia, Pa., purchased some months ago a site for the erection of a manufacturing plant at Burlington, N. J., on the Amboy Division of the Pennsylvania Railroad, as previously reported in these columns. The property is known as the "Old Burlington Boys' College Grounds," and is 1800 x 900 feet in size, situated on the Delaware River, Reed and Pearl streets. At present a malleable iron foundry, core room, tumbling and sorting room, annealing room, boiler, engine and pump house, storage room and minor buildings are to be erected. In the near future they contemplate the erection of a gray iron foundry of the same size as the malleable iron foundry, gray and malleable iron storage buildings, two three-story machine shops, stock houses, pattern shop and vaults, brass foundry, office building, &c. The malleable iron foundry is to be 420 feet long and 56 feet inside width, three wings, 56 feet in length and extending 46 feet each, will join the main building. This foundry will be served by three air furnaces and two cupolas. Industrial railway tracks will serve all parts of this and other buildings, while jib cranes will be installed for handling the heavy work. This building will be of brick with slag roof, the side walls are to be 23 feet high and the clear height under the roof trusses at the center is 17 feet 1 inch. The core shed will adjoin the foundry on the east end, and will be a one-story iron and brick building, 79 x 100 feet, and will be equipped with modern conveniences. The annealing room will be 204 x 71 feet, and will be placed just south of the foundry; the tumbling and sorting department being situated between this and the foundry. Eight annealing ovens will be built at the present time. The boiler, engine and pump rooms will be situated at the east end of the annealing room, and will occupy a space 45 x 71 feet. Specifications have been prepared for these and minor buildings, and it is hoped that operations may be started at an early date, so that they may be completed by the end of the year, it being the intention to have iron running in the new malleable iron foundry by January 1, 1903.

### The [20 Series Standard Boilers.

Those who have a demand for a round heating boiler of exceptional heating capacity will be interested in the 20 Series Standard boiler put on the market by Giblin & Co., Utica, N. Y. The success of this boiler is assured from the fact that the same construction is followed that has proved efficient in the company's well-known Standard boilers. The ash pit is of a substantial construction and adapted to the fire pot section, and the grates are of the labor saving type. Between the feed section and the dome, a sectional casing is placed to

form the walls of the combustion chamber and the smoke outlet is provided at the rear, as shown in Fig. 1. The deflector plates are provided directly back of the flue opening to throw the heated gases to the front, and where they strike on the bottom of it and pass around to the final outlet. A plan view of the feed section containing the vertical flues is shown in Fig. 2, from which it can be seen that not only a large amount of heating surface is exposed, but that it is also subject to the di-



The 20 Series Standard Boiler.—Fig. 1.—View Showing Flue Construction.

rect radiation of an intense heat from the fire. The burning gases rise through its flues to the horizontal flues under the dome and to the final outlet. It can also be seen that this construction affords, immediately above the fire, a very effective crown sheet. The fire pot and feed sections are connected by means of extra heavy wrought iron push nipples and held in position by large bolts, preventing leakage. When the heater is used for steam a higher dome is provided at the top and through the internal construction provision is made for an unrestricted internal circulation. A steady water line is assured in the steam boilers, although they are also provided with an outside circulating pipe.

The boilers are recommended for use with soft coal



Fig. 2.—A Plan View of Feed Section.

on account of the facilities provided for removing soot from the horizontal flues and the ease with which any accumulation can be removed from the vertical flues which are made largest at the bottom. The 20 Series Standard boilers are made with fire pots 18, 20½, 24½ and 29 inches in diameter; but, by the means of additional horizontal upper sections they are made to carry 275 to 800 square feet of direct radiation for steam and from 425 to 1325 square feet of direct hot water radiation.

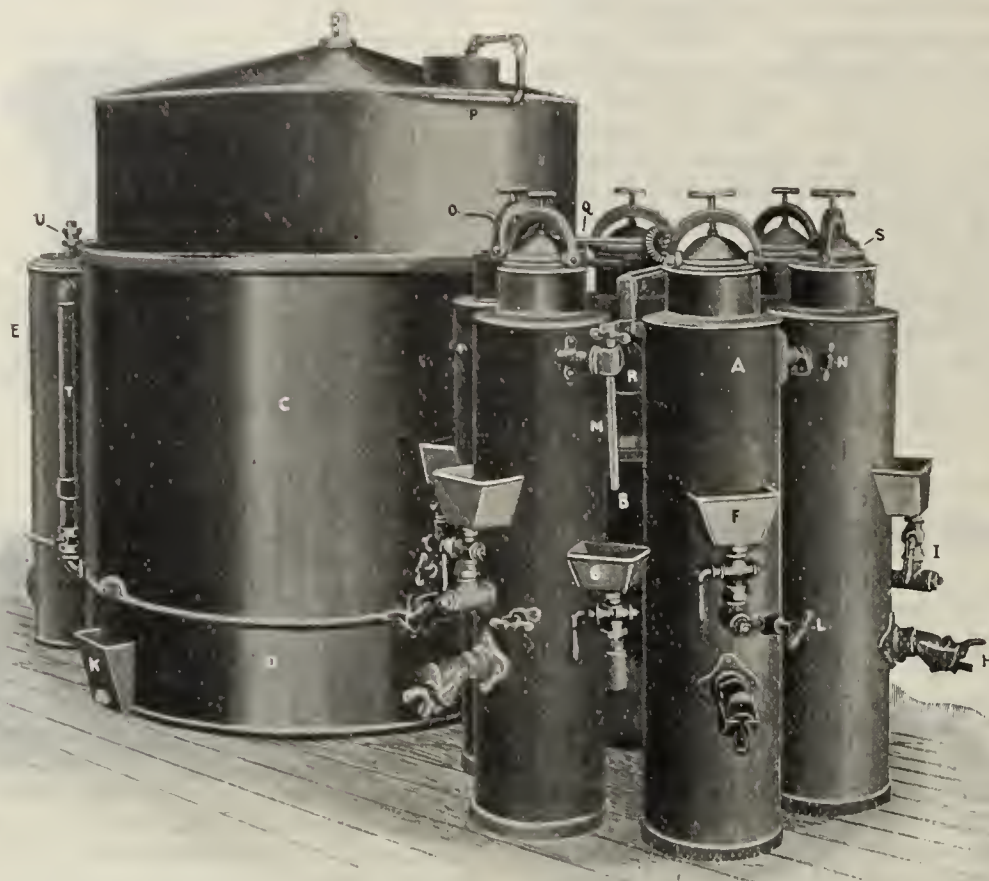
The company have just issued a new 40-page catalogue devoted to their steam and hot water heating apparatus.



## THE DRAKE SERIES C ACETYLENE GENERATORS.

With a view to presenting an acetylene gas generator which overcomes the various defects that have been discovered in the use of acetylene illuminating apparatus.

through the water in the generator and by the way of the pipe R escapes from the generator to the bottom of the seal chamber B. From here it passes up through the water and passes the condensation chamber D and enters the gasometer bell through the third body of water, where it is stored until consumed. Passing through these different bodies of water has the effect of



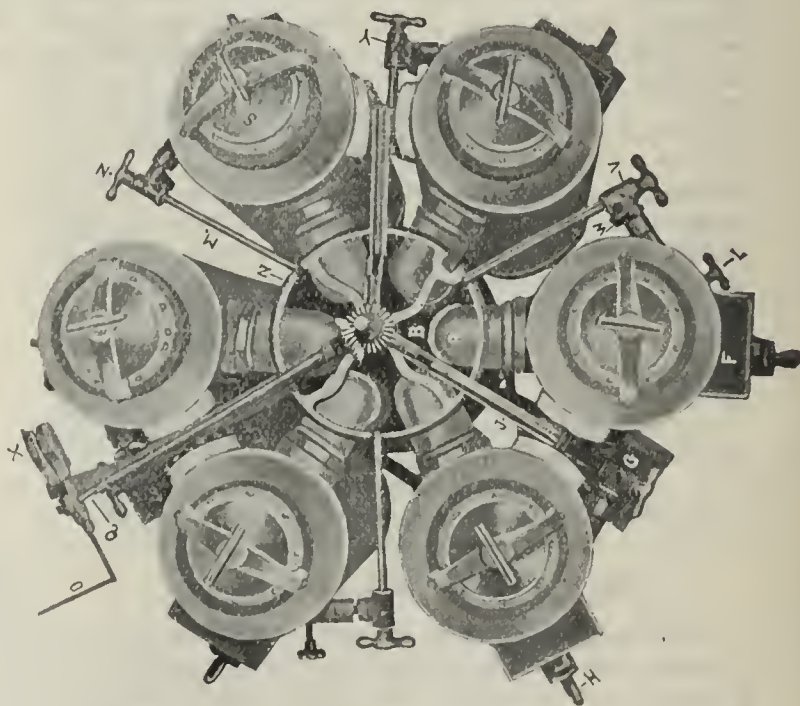
*The Drake Series "C" Acetylene Generators.—Fig. 1.—General View.*

the International Heater Company of Utica, N. Y., have recently brought out the Drake Series C acetylene gas generator, a general view of which is shown in Fig. 1. It has been found that a more satisfactory service is derived from generators which are so constructed; that a fixed charge of carbide is dropped into a certain quantity of water by arranging both the carbide and the water into units of known proportion. The possibility of dropping too much carbide into the water or too much water upon the carbide, through derangement of any part of the apparatus, is thus avoided. It has also been found that benefit attends the arrangement of every working part so that it is not only accessible, but where it can be readily seen and so that the carbide supply can be known at a glance.

The new Drake Series C generator is arranged with a gasometer tank, a condensation chamber and a sealed chamber filled with water to start the apparatus. Each of the special generators and the central sealed chamber B are filled with water through the filling lip F. Inside these generators is a trap door upon which the charge of carbide rests securely above the water compartment. After the generators are charged the clamps are adjusted to the covers of the generators and they are ready for the generation of gas. The carbide charges are designed to produce sufficient gas to fill the gasometer about three-quarters full so as to allow a wide margin for safety in case of overcharge or accident. As one of the charges is dropped into the water compartment and the gas is generated, the gasometer rises and as the gas made is consumed the bell lowers until the push arm P comes in contact with the ratchet arm O, which in turn operates the shaft Q, and the gears at the other end revolve the track Z, shown in Fig. 2, until one of the subgenerator rods is dropped, tripping a charge of carbide into the water compartment, when the generator of gas begins again and the gasometer tank rises. As the gas is generated it passes up

cooling the gas and preventing decomposition and kindred troubles.

In addition to this careful arrangement of the generators and the gasometer the Drake generator is also



*Fig. 2.—The Plan of the Subgenerators.*

equipped with the drier and screen shown in Fig. 3. The gas enters the drier through pipe 14, and any moisture that it may carry as a result of this passing through the water is here removed. From the chamber below it passes through the pipe 15 into the screen where any



fine particles of any character are separated from the gas by means of the screens, which are constructed of special material adapted for the purpose, so that when the gas enters the piping system it contains nothing that is calculated to carbonize at the burners, clog the piping or give trouble from any cause.

This new form of generator is made in ten sizes, the first six being adapted for residences and larger buildings having capacity for feeding from 50 to 250  $\frac{1}{2}$ -foot burners for a period of ten hours with charges of carbide consisting of from 50 to 250 pounds, or a capacity of feeding from 100 to 500 lights for a period of five hours. The four larger sizes have a capacity of feeding from 300 to 500  $\frac{1}{2}$ -foot burner for a period of ten hours, or from 600 to 1000 burners for a period of five hours, with charges of carbide from 300 to 500 pounds. These larger sizes are well adapted for municipal lighting, and the largest size can be located in a space 7 feet 8 inches x 21 feet 4 inches. It is also pointed out that

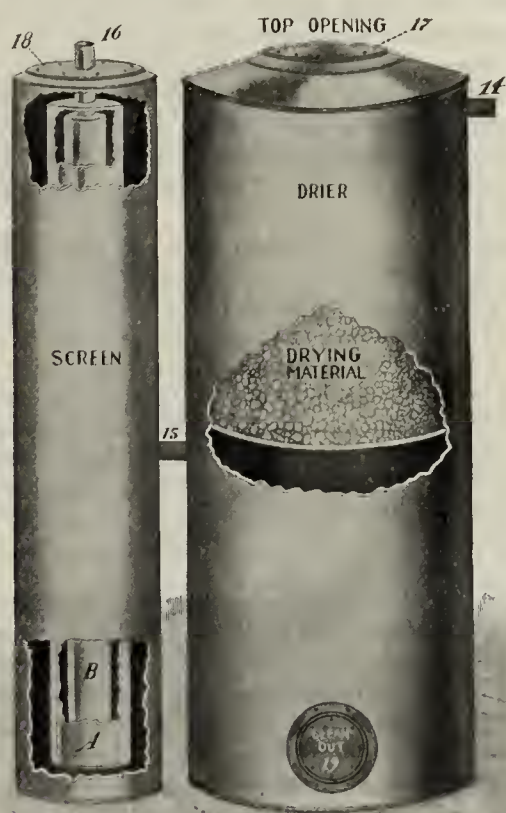


Fig. 3.—The Drier and Scrubber.

these generators will operate to their full capacity without recharging and without removing the residuum. It will be noticed that the generators shown in Fig. 1 are arranged with large draw off faucets for the removal of the residuum, when it is necessary to clean the apparatus and recharge it.

The company have recently issued an illustrated pamphlet dwelling at length on the various features of merit which their generators possess and the conditions they are qualified to meet.

### Brown & Wales' Plumbing Goods.

A catalogue of 95 pages, devoted to sanitary specialties and plumbing supplies, has been issued by Brown & Wales, 69-83 Purchase street, Boston, Mass., who have just increased their facilities for handling plumbing supply orders promptly. The catalogue opens with a brief statement that it presents but a few of the strictly high grade goods which the house carry and that their stock includes a full line of first-class plumbing material. The first 20 pages show views of fine bathrooms and pictures of Ideal solid porcelain Roman bathtubs and Ideal French bathtubs, followed by handsome enameled cast iron bathtubs of the French, Roman and modified French patterns, with wide and narrow roll rims, and various styles of supply and waste fixtures, with shower baths of different styles and shower bath

curtains. Enameled sitz tubs and foot tubs are shown as well as galvanized steel tubs and enameled tubs. Another section of the catalogue is devoted to compression and fuller bath cocks, and connected waste and overflow fixtures. Fifteen pages are occupied by lavatories, including the Ideal porcelain elliptical lavatory on a porcelain pedestal and various styles of porcelain roll rim lavatories. These are followed by lavatories made up of various kinds of marble in many styles and forms, supported by legs and also by brackets, with various styles of supply and waste fixtures and traps. A number of enameled iron lavatories adapted for fine residences and less pretentious buildings are also presented. Kitchen sinks of enameled iron, porcelain pantry sinks, drinking fountains and wash trays form another section and various styles of compression valve and self closing basin cocks, basin wastes, chain stays, traps, brackets and legs for lavatories occupy a number of pages. Water closets with high and low down flushing tanks and with the Volumeter flushing valve are awarded special notice. These closets are of the siphon jet and siphon wash down character. Siphon eduction range closets are followed by shower bath equipments, closet valves, bathroom mirrors and a variety of combination bathroom fixtures, such as cup holders, soap holders, sponge baskets, towel rods, bath seats, &c., and the catalogue closes with a variety of standard brass goods, hopper closets, closet tanks, closet seats and flushing pipes.

### Will It Increase the Sale of Heating Apparatus?

The last number of the *Official Bulletin* of the National Association of Master Steam and Hot Water Fitters says that the National Executive Committee of the association has been devoting considerable time and attention to the matters placed in their hands by the members at the last convention, and that among the items requiring attention is the one concerning boiler manufacturers making plans and specifications for heating work. Commenting on this subject the following statement is made:

Considerable dissatisfaction has been expressed by various members over the action of certain manufacturers who are charged with following the practice which is such a detriment to the legitimate master steam fitters. Complaints are now being investigated, and we request all members to place in our possession any facts that they possess which will throw light upon this question.

The resolutions upon this subject passed at the last convention mean exactly what they say, and we expect our members to follow the example of certain loyal members who recently placed orders for boilers with manufacturers who do their best to live up to the spirit as well as the letter of the resolutions.

The resolutions are as follows:

"Whereas, Certain boiler and radiator manufacturers canvass our prospective customers and make plans, specifications and estimates for them to our injury, and,

"Whereas, These boiler manufacturers endeavor to have tinsmiths do the work under the boiler manufacturers' supervising; therefore be it

"Resolved, That it is detrimental to our interests to purchase goods of boiler or radiator manufacturers who make plans, specifications or estimates on heating work."

The above resolutions contain no uncertain or ambiguous language.

### Equation of Pipes.

I wonder how many of my brother engineers, asks a writer in the *Engineer*, know that the diameter of a circle, or a pipe, with an area equal to that of any two other ones, may be found without any calculation by means of nothing but the square corner of a board and a rule. The process is simply to lay off the two diameters on the two edges of the board and measure diagonally from one to the other. If you have a carpenter's square the process is reduced to the simple diagonal measurement.

Where three or more pipes are to be led into one, convert two into an equivalent and work as with only two pipes. I find this simple method of great assistance in the engine room, as you can see at a glance, almost, what size pipe is required without any calculation.



## PIPING MATERIALS FOR STEAM PLANTS.\*

### IN TWO PARTS. PART II.

#### FLANGES.

There are two recognized standards for cast iron flanges at present in use. It has taken some time to bring about uniformity, but all the large manufacturers have now agreed to adopt the tables. We attach to this paper dimension sheets covering all details.† Table No. 1 is for steam pressures up to 125 pounds. This table was adopted by a joint committee of the Society of Mechanical Engineers, the Master Steam Fitters' Association, and the manufacturers. Table No. 2, for pressures up to 250 pounds, was adopted at a meeting of manufacturers held in New York on June 28, 1901. It is generally referred to as the "Manufacturers' Standard." It would be a great convenience to all manufacturers of piping material and their customers if the Association of Steam Engine Builders would adopt these standards for all piping connections. The diversity in diameters and drilling of flanges on engines, pumps and condensers is the cause of much trouble and delay.

#### FLANGED FITTINGS.

We manufacture these fittings in three weights, the lightest for very low pressures, such as exhaust or condenser connections; the second for standard pressures up to 125 pounds, and the heaviest for high pressure lines up to 250 pounds per square inch. The thickness of body metal in the three styles is as follows:

|              | Light.<br>Inch. | Standard.<br>Inches. | Extra heavy.<br>Inches. |
|--------------|-----------------|----------------------|-------------------------|
| 6-inch.....  | ..              | 9-16                 | ¾                       |
| 10-inch..... | ..              | ¾                    | 1 5-16                  |
| 12-inch..... | ½               | 1 13-16              | 1                       |
| 16-inch..... | ¾               | 1                    | 1 3-16                  |
| 20-inch..... | 1 1-16          | 1 1-18               | 1 5-16                  |
| 24-inch..... | ¾               | 1 ¼                  | 1 ¼                     |
| 30-inch..... | ¾               | 1 ½                  | ..                      |
| 36-inch..... | 1               | 1 ¾                  | ..                      |

Applying to these fittings the well-known formula for cast iron pipe,  $P \frac{2T}{D} \times \frac{S}{5}$  in which  $P$  = pressure,  $T$  = thickness of metal,  $D$  = diameter,  $S$  = tensile strength and 5 = factor of safety, it will be seen that we have largely increased the factor of safety to cover possible defects in the metal, core shifts, or other imperfections.

For example, solving the factor of safety  $F = \frac{2TS}{PD}$  and in the case of a 16-inch extra heavy fitting to carry 250 pounds working pressure we have 1 3-16 inches of metal with a tensile strength of 20,000 pounds, then  $F = \frac{2 \times 1.18 \times 20,000}{250 \times 16} = 11.80$ . In a 12-inch extra heavy fitting  $F = 13.33$ , and in a 24-inch extra heavy fitting  $F = 10$ .

An excess of strength is desirable, as the fittings have to stand the strains incident to changes in temperature, vibration and settling of the pipe line. These conditions make it necessary to use rather heavy flanges and of necessity body metal thick enough to carry the flanges without shrinkage strain. We have also demonstrated by a large number of tests that a formula which may be fairly accurate for cylinders is subject to some modification when applied to tees, elbows and crosses. In fact, the majority of the fittings burst at pressures considerably below that indicated by theory. In all cases, however, we have a safety factor high enough, and the thickness of metal may be considered well adapted to the purpose for which the fittings are used.

#### VALVES.

In valves the call is now for the straightway type. A number of angle valves are still used on boiler or engine leads, but a globe valve on a plant of any magnitude is very exceptional. They are still used freely on small lines and wherever it is necessary to throttle the steam. Beyond this the gate valve has so many advantages that it has practically secured the market. To

cover the range of power plant work we have had to build four lines as follows:

1. Low pressure for exhaust and condensing lines.
2. Standard for pressure not exceeding 125 pounds.
3. Medium for pressure not exceeding 150 pounds.
4. Extra heavy for pressure not exceeding 250 pounds.

Upon the low pressure line we have not made very exhaustive tests, further than to ascertain that the valves are tight at 50 pounds per square inch. The other lines have been thoroughly exploited on all except the very largest sizes. Boiling down the results and striking general averages we arrive at the following: Standard valves, 4 to 8 inches, will burst at about 700 pounds; standard valves, 10 to 16 inches, will burst at about 600 pounds. The larger sizes we have not burst, but have tested the 18-inch to 450 pounds and 20 to 30 inch to 300 pounds pressure without injury. The medium valves will withstand a pressure of about 500 pounds in excess of the standard. Extra heavy valves, 4 to 8 inches, burst at 1600 to 1900 pounds; extra heavy valves, 10 to 16 inches, burst at 1200 to 1500 pounds.

The larger sizes have not been destroyed, but the 18-inch has been subjected to 850 pounds and the 20 and 24 inch to 600 pounds without injury. The same thickness of body metal is used in the valves as given for flanged fittings, except that all gate valves have the metal increased at the top of the body to carry any settling strains.

The next point to ascertain was the maximum load which could be applied to the disks without causing a leak. This load was found to be in nearly all cases 80 per cent. of the ultimate strength of the body.

It must be borne in mind that all pressure valves mentioned were of the solid wedge type. It is not possible to obtain equivalent results from parallel seated double disk valves, for the reason that the latter have two comparatively light faces set out by an internal wedging mechanism, and the face exposed to pressure will spring under a load very much less than can be sustained by a solid wedge.

It has been the custom for many years to rib the bodies of high pressure valves. The ribs give a massive appearance, and are desirable on that account from the standpoint of the selling department, but they serve no good purpose mechanically and are a detriment instead of an advantage. The distribution of metal is so uneven that shrinkage strains are set up all along the corners where the ribs join the body, making the metal porous. A ribbed valve will not stand any more pressure than one with a plain body, and the only point which might be argued in favor of the ribs would be that they stiffen the valve against strains due to settling in the line. It is not, however, very logical to guard against a remote possibility by setting up a number of internal strains, especially where a plain bodied valve can be designed which will take care of all strains reasonably to be anticipated. We have concluded to abandon the ribs altogether, and shall hereafter only make valves of that style on special orders.

For high pressure work we always recommend valves having outside screw and yoke, stationary wheel and rising spindle; in fact, for any service this type is preferable, except on the very large sizes where the great height from top of spindle when open to the bottom of the valve is a serious objection. The advantages over the internal screw valves are as follows:

1. The stem is an indicator showing at all times the position of the disk.
2. The thread on the stem is never in contact with the steam and can be properly lubricated.
3. There is no thread in the wedge.

Bypasses should be used on valves 8 inches and larger when high steam pressure is used. The load on the wedge of an 8-inch valve at 180 pounds pressure is 9047 pounds, and on a 16-inch valve 36,190 pounds. It is obvious that under such loading the pressure must be partially equalized on each side of the wedge before the valve can be opened with facility.

#### PIPE BENDS.

Bends are being used very freely. By their use all expansion strain can be taken up and the number of joints materially reduced. In the process of bending the

\* Paper read by John B. Berryman, manager engineering department Crane Company, Chicago, before the Engine Builders' Association of the United States, at Pittsburgh, May 22, 1902.

† We have omitted these sheets.



outer circumferential wall of the pipe is stretched, as the inner wall will not compress to any extent without buckling. There is also an appreciable loss of metal through scaling. Unless the bends are of very short radius they are generally made of standard pipe for pressure of 125 pounds or less, full weight pipe up to 175 pounds, and extra heavy pipe for higher pressures. If the bends are used to take up expansion it is well to make them of pipe as light as is consistent with safety. The shape of the bends will determine generally the material which ought to be employed, as in those with large radius the stretching of the metal may be almost disregarded.

In conclusion we strongly advocate the use of staple, catalogued goods wherever possible. Such a variety of fittings and valves may be obtained now from stock that there does not seem to be any necessity for the enormous number of specials which we, in common with other establishments in our line, are daily called upon to make. Many times these specials serve no other purpose than to put into concrete form some whim or fad of the engineer in charge of the installation.

Specials are often the product of theory only. Staples result from theory and experience. A purchaser who buys a staple article from a reputable house has the assurance that such an article has been thoroughly tried out, possibly hundreds or thousands of them, under conditions similar to his own. In addition he can get reasonably prompt shipment and the benefit of a lower price due to special machinery and the elimination of pattern labor.

[THE END.]

### CANADIAN MASTER PLUMBERS.

The annual convention of the National Association of Master Plumbers of Canada was held at Halifax, N. S., last week. It was largely attended and was devoted to a discussion of matters pertaining to the plumbing trade, with a view to protecting the interests of the trade. At the close of the meeting the following officers were elected for the ensuing year:

*President*, Frank Powers, Lunenburg.

*Vice-President*, P. C. Ogilvie, Montreal.

*Secretary*, Geo. A. Perrier, Halifax.

*Treasurer*, Ald. Lamarche, Montreal.

*Provincial Vice-Presidents*, Ontario: W. H. Meredith, Toronto; Quebec, E. Lesperance, Montreal; Nova Scotia, Jas. Farquhar, Halifax; New Brunswick, Wm. Watson, Moncton; British Columbia, H. Mahoney, Guelph; Manitoba, A. J. Hammond, Winnipeg.

It was decided to hold the convention at Montreal next year. The delegates were entertained by an excursion on the harbor and in the evening were given a pleasant surprise at the Bedford.

### Canadian Sanitary Committee Report.

Through the courtesy of J. W. Hughes, Montreal, Canada, chairman of the Sanitary Committee of the National Association of Master Plumbers of Canada, we are enabled to present the following report read at the annual convention in Halifax, N. S., on August 16:

Your Sanitary Committee have the honor to report that during the past year there has been no falling off in the interest taken by the public in sanitary matters. The educational campaign, begun some years ago by the doctors, the press and the pulpit, has been kept up, and is from year to year producing an increased interest in this important matter. Statistics show that the average duration of life has been considerably prolonged, the great gain being along the line in which we are more particularly interested—namely, domestic sanitation. While some diseases continue to carry off their unfortunate victims at the former rate, those diseases known to be the result of filth, impure food and foul air, in other words, diseases produced by controllable causes, are yearly becoming less fatal and frequent.

As good plumbing is now acknowledged to be a most, if not the most, important feature in bringing about this satisfactory state of affairs, your committee feel that our master plumbers are reaping the reward of the time, energy and means they have employed during the past, and can honestly be congratulated on the fact that their labors have not been in vain. While this is the case our vigilance must not be relaxed. We are only

on the threshold, and at the very beginning of our work, which must not cease until certain diseases, now so prevalent, are as rare as the once so deadly typhus fever.

The old simple form of plumbing has no longer a *raison d'être*. New methods, improved apparatus and materials are being constantly brought into the market and, under keen business pressure, pushed in a manner formerly unknown. The plumber of to-day must be in a position to distinguish the good from the bad, and protect the public and himself from imposition, for the old adage "that all is not gold that glitters" is constantly to be borne in mind in this connection.

While the many changes may to a certain extent have reduced the necessity of knowing "how to do," the reasons for knowing the "why" have increased tenfold. Education in the sciences forming the basic principals of our art is to-day more than ever necessary. The great question, in the opinion of your committee, is how are young men, the plumbers of the future, to be trained? A knowledge of the skill of hand it is already difficult to attain in the shops. Where are they to attain the scientific knowledge so indispensable, if they are to rank as more than skilled laborers and be competent to undertake work on the correctness of which, to a large extent, depends the safety of our people's most valuable and important asset, good health?

Can it be had in the colleges? Yes; but plumbers do not attend these important seats of learning. The common school? No. Such training forms no part of the common school course. The technical school? Perhaps; in a modified form. Then there seems to be no other alternative than that of establishing in all large centers first-class plumbing schools, such as that founded by the late Colonel Auchmuty of New York.

In conclusion, your committee earnestly commend the question of the education and training of the plumber of the future to the serious consideration of our association.

### THE PLUMBING AND STEAM SUPPLY BOWLING LEAGUE.

The following letter sent out by Martin Behrer, president of the Plumbing and Steam Supply League of New York, will be received with pleasure by the bowlers in the local supply trade, who still have a keen appreciation of the enjoyment derived from the tournament run last winter. Benefit always attends the relaxation from the cares of business when those who participate in it not only get good exercise but also broaden their acquaintance. They establish relations with their competitors which avoid the friction that accompanies estrangement. Such association as was brought about by this bowling league last winter is a good thing for the trade and we hope that success will again attend the effort to bring competitors together in a friendly contest. President Behrer's letter is as follows:

In order to make arrangements for the alleys on which the coming tournament of the Plumbing and Steam Supply League will be held, it is necessary to ascertain at an early date how many members will take part, in order to determine the number of nights in each week required to complete the schedule, and also as to what nights, exclusive of Saturday, would be most convenient on which to roll.

I would therefore thank you to advise me as soon as you possibly can regarding same. If you should know of other jobbing houses who did not roll with us last year and who would like to enter a team, would you kindly have them forward their application to me at once, explaining to them that teams are wanted composed of representative men of our trade?

All teams intending to contest must send their entrance fee, \$10, and names of team and substitutes to the treasurer, Fred. Lowe, 90 Beekman street, on or before September 1, 1902.

SECRETARY H. A. SMITH of the Eastern Trade Golf Association, 1123 Broadway, New York, has issued, under date of August 11, a letter giving the names of the new members added to the Association since his last letter was issued, and inviting those in the heating and plumbing goods manufacturing trades to take membership in the association and enjoy the social side of business life, which is the principal object of the association. The benefit derived from previous efforts in this direction have demonstrated their value and tradesmen will do well to arrange their business so as to meet their competitors when the strenuous side of trade has been relegated to the rear for a season.



## FUEL OIL APPARATUS.

Those who are called upon to equip power plants and manufacturing establishments with fuel oil burning furnaces and apparatus will find valuable information in the catalogues issued by the Rockwell Engineering Company, 26 Cortlandt street, New York. Boiler makers will be specially interested in a portable oil burning rivet forge which by means of a hose connection enables the forge to be moved within a wide radius for the convenience of the operator and which has a large capacity in rivet heating for either indoor or outdoor use wherever boiler work is being done. The catalogue contains a sheet printed in red stating that the company have been manufacturing and installing fuel burning appliances for 15 years and guarantee every installation. They design and complete furnaces for every purpose, using oil as fuel, and are prepared to install a complete equipment, including tankage of any capacity, and give instructions for the operation so that any first-class mechanic can either erect or operate.

Catalogue B consists of 16 pages and is devoted to fuel oil burning apparatus for boilers, whether in manufacturing establishments or on steamships. The Rockwell fuel oil pumping system is so arranged that it will automatically supply oil from storage tanks to burners by means of exhaust steam to a high temperature, carrying the oil in under a uniform and high pressure under the best condition for rapid and complete combustion, whether the oils be light or heavy. It is positive in operation, not depending upon gravity, and has no oil above the burners. The burner is made of the best steam metal, nickel plated and the nozzles are of durable bronze. They are fitted with valves and brass unions for receiving the oil from the tanks and the steam or compressed air for feeding the jets at the nozzle, the supply being governed by a very powerful needle valve. The construction is such that the working is simple and it can be operated readily by the engineer or fireman. This catalogue also shows oil hose for unloading tank cars, oil meters, storage tanks, tell tale and ventilator pipes and burner tiles. It also gives views of boilers equipped with the Rockwell fuel oil burners, one engraving showing a tank car discharging into the storage tank from which, by means of the company's duplex system, the oil is fed to the burners under the battery of boilers.

Catalogue C consists of some 50 plate pages showing a great variety of furnaces which have been designed and constructed by the concern for various customers. Annealing and hardening furnaces of various sizes, from a small to a very large capacity, are shown. The wide adaptability of oil fuel is indicated by the apparatus shown which includes brass and copper scrap melting furnaces, rivet heaters, revolving cylinder annealing furnaces, double deck hardening furnaces, double and single and annealing furnaces such as are used in large sheet mills, pot annealing furnaces, crucible brass melting furnaces in a long series, wire baking and wire brazing furnaces, enameling furnaces, five-plate cloth singeing furnaces, automatic billet heating furnaces, steel casting annealing furnaces and liquid boiling furnaces. Plates are also given containing views in manufacturing establishments equipped by the company, including forge furnaces, lead and sand tempering furnaces and regenerative welding furnaces.

## A Large Plumbing Contract.

The sanitary appointments in the entire plumbing system of the new Ansonia apartment building, New York City, have been constructed by Milton Schnaier & Co., 347 Columbus avenue. It is said to be the largest plumbing contract ever executed in the United States, amounting to \$350,000. Among the features of unusual interest is a swimming pool with a capacity of over 300,000 gallons, which is supplied with water from the Hudson River. Hot and cold salt water baths will be furnished as well as fresh water baths and all the water is filtered to insure its being perfectly clean. The system for supplying water to the plumbing system is a departure from the beaten track. Some two

years have been expended in completing the work. The building contains over 400 bath rooms, each of which is equipped with a solid porcelain bathtub, wash basin and water closet. Aside from these bathrooms there are 600 additional toilet rooms and 800 additional wash basins. The establishment is equipped with ice water plants and the kitchen has a complete dish washing apparatus. The house drainage system has received the greatest attention, five separate sewer connections being made. All of the sanitary piping is made of galvanized iron pipes with screw joints into special recessed fittings, and care has been taken to arrange them so that there will be no traps or pockets, but so that the waste will flow through the pipes readily. The piping system is arranged to be thoroughly ventilated by means of fresh air inlets that cannot be obstructed and vent pipes that are carried through the roof and have the tops protected with guards.

## New York City Notes.

Richmond Branch will give their annual outing and clam bake at Silver Lake on Tuesday, August 26. The Committee of Arrangements are: C. W. Alexander, W. J. Barry, W. T. Warren, T. F. Santry, Robert Crossen, Jr., T. E. O'Halloran and D. S. Melville. Tickets can be obtained from any member of the committee.

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Many plumbers have said that there was no money in school work. Messrs. Kirchhof & Brown are going to disprove this statement and have taken the plumbing contract for the Commercial High School on Sixty-fifth street, between Broadway and Amsterdam avenue.

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John Smith of Third avenue is plumbing two private houses on Fifth avenue, between Eighty-third and Eighty-fourth streets. There are 11 bathrooms in each house. All fixtures to be Meyer-Sniffen specialties. T. J. Tuomey also has a mansion for Harry Payne Whitney at Fifth avenue and Seventy-ninth street. T. J. Byrne has two nice jobs well in hand, the Corn Exchange Bank, at 15-17 William street, and the mansion which C. M. Schwab, president of the United States Steel Corporation, is erecting at Riverside Drive and Seventy-third street.

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W. Y. Jack & Co. have considerable work on hand, among the good jobs being the residence of Paul G. Thebaud, at White Plains, and the alterations to the Reynal house, at the same place; the Francis G. Lloyd residence at 36 East Sixty-first street, the Speyer's School, at Lawrence street and Amsterdam avenue, and the United States Savings Bank, at Madison avenue and Fifty-eighth street.

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M. J. O'Brien of Sixth avenue, will be missed at the Manhattan plumbers' outing next week, as he is making an extended tour through the West. He was last heard from at the Elks' convention in Salt Lake City.

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Owen Costello, of Lyman & Costello, and his wife are making a visit to the "Old Country." They are expected back about October 1.

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Noble and Gauss, after some years of retirement as plumbers, have again entered the field and are plumbing two private houses on Riverside Drive, between Eighty-seventh and Eighty-eighth streets.

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W. G. Comell has the plumbing in the new banking house of Kuhn, Loeb & Co., at the corner of William and Pine streets.

THE NATIONAL TUBE COMPANY, from their McKeesport plant, exported through Eastern seaboard points 2121 tons of Iron Pipe last month. Europe was the largest purchaser, nearly 1500 tons having been forwarded to various ports in the United Kingdom and Continental Europe. Chinese and Japanese ports took 325 tons. Other shipments were made to Egypt, Cuba, Australia, Mexico and Brazil.



## Heating and Plumbing Notes.

THROUGH an error we stated in *The Metal Worker* of August 16 that the L. J. Mueller Furnace Company of Milwaukee were the contractors for the heating and ventilating of the State Capitol. We are informed by them that this is a mistake, as they do no contracting work, and confine themselves to the manufacture of goods.

THE SMITH & THAYER COMPANY, 234 Congress street, Boston, Mass., manufacturers of the Winchester Heaters, announce that they have purchased the business of George Tyler & Co., Boston, dealers in Water Supplies and Gas Engines, and will add these lines to their business. A sample room will be fitted up in which will be shown a large line of Gas Engines varying in size from 2½ horse-power to 60 horse-power. These engines are made by the Columbus Machine Company, Columbus, Ohio, for whom Smith & Thayer are sole New England agents.

THE KREIN ACETYLENE GAS COMPANY of Wapakoneta, Ohio, have placed contracts for two large factory buildings and work will start as soon as material can be obtained. The company will manufacture Krein Acetylene Gas Generators, Field Filters, Adjustable Elbows and other articles connected with the production of Acetylene Gas.

THE PHILIP CAREY MFG. COMPANY, Lockland, Ohio, manufacturers of Carey's Magnesite Flexible Cement Roofing, Asbestos Sectional Steam Pipe and Boiler Coverings, &c., after several months of scientific tests of various materials, have been awarded the contract to furnish and supply their 85 per cent. carbonate of magnesite covering at the power station of the Manhattan Railway Company, Seventy-fourth street and East River. The contract amounts to approximately \$25,000, and is said to be one of the largest closed by any Pipe company manufacturer in recent years. Among other large contracts recently closed are 21 large cotton mills; the Colorado plant of E. H. Dyer & Co. of Cleveland; 18 lake vessels built by the American Shipbuilding Company; Adams, Stokes, Astor and Macy buildings in New York.

THE McNAB & HARLIN MFG. COMPANY, 56-60 John street, New York, makers of Brass and Iron Fittings for steam, water and gas plants, will materially enlarge their plant at Paterson, N. J. They will erect two additions consisting of a brick storehouse, 50 x 100 feet, and two stories in height, and a brick machine shop, 34 x 200 feet, and three stories. This will be placed between the present shop and foundry, and have a frontage of 34 feet on Straight street and run back 200 feet to the Erie Railroad tracks.

THOMAS W. SPARKS, manufacturer of Shot and Bar Lead, 121 Walnut street, Philadelphia, Pa., has decided to engage in the manufacture of Lead Pipe, Traps, Sheet Lead, Car Seals, Lead Wire, &c., is now asking proposals for the equipment of the plant, which will be located at the present works, 131 Carpenter street, Philadelphia, where new building, &c., will be erected if necessary. Presses, mills and a full equipment will be required, as we are advised that the manufacture is to be conducted on an extensive scale.

THE RED JACKET MFG. COMPANY, Davenport, Iowa, are sending out a catchy mailing card describing the new quick repair Lift Pump for drive wells, cisterns, shallow wells, &c., which they are placing on the market.

THE C. M. KEMP MFG. COMPANY, Baltimore, Md., are erecting a three-story building as an addition to their Plumbers' Supply plant.

THE PITTSBURGH WARMING & HEATING COMPANY will, it is reported, erect a plant for the manufacture of Heating Appliances at Elm Grove, W. Va.

THE ASSOCIATION OF MASTER PLUMBERS of St. Louis, Mo., have arranged to enjoy their annual outing by means of an excursion on the Mississippi River on Wednesday, August 27. They will embark on the elegant river steamer "Hill City" for Riverside Park. A programme has been arranged that will afford entertainment for all who attend.

LANGDON & DALEY of Hartford, Conn., have a contract for plumbing and heating a fine new residence at Amagansett, N. Y., for C. A. Ensign of Tariffville, Conn. They are also plumbing the residence of Frank B. Griffin at the same place.

F. I. LESSARD & Co., Springfield, Mass., are busy with a number of heating and plumbing contracts.

THE ANDREWS HEATING COMPANY, 803 Globe Building, Minneapolis, Minn., who make a specialty of heating residences, are sending to prospective purchasers blue prints showing the floors of a building with the heating system laid out upon it, accompanied by a circular explaining their method of canvassing for the heating of buildings in the vicinity of Minneapolis. One page contains a testimonial letter from a customer, who speaks highly in favor of the company's work, and on another are cuts of the various fittings used and a *fac-simile* of their method of enumerating the parts needed to facilitate the placing of orders. Those who make a specialty of house heating will find much in this advertising matter that is of interest.

FRED. C. DUVAL of Los Angeles has purchased an interest in the plumbing business of J. H. Linkletter & Co., Whittier, Cal.

THE BURKE-BOLLMMEYER OILER COMPANY, Wauseon, Ohio, manufacturers of Oilers for windmills, have incorporated under the name of the Burke-Bollmeyer Mfg. Company for the manufacture of Windmills and Windmill and Tubular Well Supplies, in addition to their Oiler business. They have just moved into new quarters with a floor space of 6000 square feet, which they expect will suffice for present needs. The officers are S. W. Burke, president, and Fred. J. Bollmeyer, secretary and treasurer.

THE Master Plumbers of Revere, Mass., held a meeting on August 13 at the shop of W. J. Wills, when Secretary Brown of the State Association of Master Plumbers organized a branch of that association. The following officers were elected: President, Frank H. Hussey; vice-president, George A. Glover; secretary, Alex. Frazer; treasurer, W. J. Wills.

BARTLETT BROS. of Cleveland, Ohio, have secured the contract for heating the new High School Building at Warren, Ohio.

THE GOLD CAR HEATING & LIGHTING COMPANY of New York City have filed a certificate at Albany, N. Y., showing that their capital of \$1,000,000 has been paid, \$700 in cash and \$999,300 in property. The certificate is signed by Edward E. Gold, Charles W. Osborne, William E. Banks and Frank J. Menzies.

THE JEFFREY MFG. COMPANY, Columbus, Ohio, are distributing a pamphlet devoted to their Water Elevators for hand, horse-power or steam power use, designed for raising water for irrigating or drainage purposes.

NEEMES BROS., 206-214 First street, Troy, N. Y., are sending to the trade a six-page folder devoted to the Neemes Grate, which is adapted for square fire chambers of any size, and is also made in a variety of sizes for round fire boxes. The construction provides for the Grate to be divided into two parts, either part of which can be agitated by means of a lever attached to the front. There are shear bars placed between the shaking bars and in operating the lever clinkers are cut so that they will pass through to the ash pit, leaving the bottom of the fire clean, aiding the air which enters through the ample air space, and promoting a combustion which will generate an intense heat with an economy of fuel. The construction provides for expansion, and also gives the Grate a long lasting power.

THE PENNINGTON FOUNDRY & HEATER COMPANY, Pennington, N. J., and their New York agents, Phelps Brothers of 284 Pearl street, are sending out a six-page folder devoted to the Pennington N. B. M. Steam and Hot Water Heaters. These Heaters are made with 20 and 30 inch grates, and are of the vertical sectional return flue types. The folder shows general and broken views, so that the water and fire travel can be readily seen. Views are also presented of the grates, the check draft and the front, back and intermediate sections.



THE controversy over the heating system for the Lafayette High School at Buffalo, N. Y., is about to end, concessions having been made by Professor Woodbridge, Architect Hesswin, the Commissioner of Public Works and a representative of the Buffalo Forge Company. The modified specifications provide for dividing the school building into two sections for heating and ventilating purposes, an east and a west section. This will necessitate the provision of two air chambers, two fans and two engines. It is expected that the modified system will increase the cost of the work about 15 per cent.

THE F. O. RAY COMPANY, Nashua, N. H., have the contract for plumbing and heating the St. Joseph Orphanage in that city. They will install two large size Gurney Hot Water Heaters and 5000 feet of Wrought Iron Pipe.

EMMETT MARTIN, Fort Wayne, Ind., bid \$3195 and secured the contract for installing the steam heating system, to be equipped with the Paul system of air exhaust from the radiators, and piping system for the Indiana State School for Feeble-minded Youth.

THE PITTSBURGH SUPPLY COMPANY, 226 First avenue, Pittsburgh, Pa., announce that they are about to issue a new fall catalogue devoted entirely to Gas Burner Apparatus.

THE UTICA HEATER COMPANY, Utica, N. Y., are sending to the trade a portfolio of views illustrating their line of Steam and Hot Water Boilers, which will be found a great convenience to those who are canvassing for the sale of heating systems. The portfolio contains a set of 6 x 9 inch finely finished cards bearing general and sectional views of the Imperial Vertical Sectional, the Auburn Horizontal Sectional and the Keystone Combination Steel and Cast Iron Steam and Hot Water Heaters. With the aid of this portfolio a steam fitter can bring to the attention of his customers the Boiler best adapted for their use in a very convenient form. The portfolio is accompanied with price-lists of the goods.

LEHRBACH & NALY, Wlnona, Minn., have the contract for installing the heating system in the new Roman Catholic Church at Arcadia, Minn.

THE SMITH & THAYER COMPANY of Boston, Mass., will supply the heating apparatus and O'Toole Bros. of Clinton, Mass., have the contract for the plumbing in St. Mary's Hospital at Clinton.

HENRY TINKLEBAUGH of Litchfield, Ill., bid \$1475 and secured the contract for heating the Fifth Ward School Building in that town.

THE HENDERSON PLUMBING COMPANY, Henderson, Ky., have the contract for installing the heating apparatus in the Henderson Sanitarium at their bid of \$1164.

THE Board of Selectmen of Webster, Mass., have appointed Nelson B. Johnson and James E. Crowley Plumbing Inspectors.

HOFFMAN, BROWN & WILSON of Circleville, Ohio, have secured the contract for plumbing the fine residence of Senator T. W. Marchant at Washington and for heating and ventilating the Presbyterian Church at Greenfield at their bid of \$3000, and they will do the plumbing in the Methodist Church in the same town, to cost \$1600.

JOHN M. BRUCE, secretary of the Engineering Review Company, will resign that position on August 25 to accept the treasurership of the Judson A. Goodrich Company, manufacturers and jobbers of high grade Steam Specialties at 105 Beekman street, New York. Prior to his connection with the Engineering Review Company Mr. Bruce was for eight years New York salesman for Bruce & Cook.

THE AMERICAN RADIATOR COMPANY, Chicago, are calling attention to their Zenith Flue Radiators with box base for direct-indirect heating, which have been used in some of the largest buildings of all the principal cities.

FRANK J. HEARNE, president of the National Tube Company, has retired from that position. Vice-President William B. Schiller has been selected to succeed

Mr. Hearne, whose resignation, it is stated, is caused solely by a desire to resign active business cares, in which he has been engaged for the past 36 years. Mr. Schiller has long been identified with the Tube business and is known as an expert therein. His place as first vice-president will be filled by W. H. Latshaw, now second vice-president. Mr. Latshaw is succeeded by John D. Culbertson, who has been treasurer of the company, and A. S. Matheson has been elected third vice-president.

#### New Firms and Changes.

W. BARGAMIN, formerly of the plumbing and heating firm of G. & A. Bargamin, 504 West Main street, Richmond, Va., has taken charge of the old stand, and will continue business as in the past.

B. F. THOMPSON has disposed of his interest in the tin and plumbing business of Thompson & Wood, Malone, N. Y., to his partner, E. J. Wood, who will continue under his own name.

PUTNAM & LA FOUNTAIN of Springfield, Vt., have purchased the plumbing business and hardware stock of J. T. Robbins at Charleston, N. H., and will open in the Dodds Building on Main street.

ENOS W. THAYER of Meredith, N. H., and B. W. Cooley are interested in the organizing of a company to manufacture Faucets and similar goods at Antrim, N. H.

THE S. C. LOWE SUPPLY COMPANY, New Bedford, Mass., have been incorporated under the laws of New Jersey, with a capital stock of \$100,000, of which \$1000 has been paid in. The incorporators are Stephen C. Lowe, Thomas C. Lowe and Charles A. Bowen. The company will deal in Plumbing Materials.

#### Three-Way Valves.

The Clayton & Lambert Mfg. Company, Detroit, Mich., observe that there are many ways of doing things,

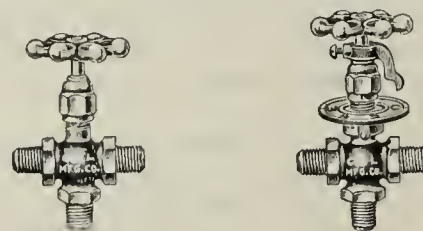


Fig. 1.—Valve without Dial. Fig. 2.—Valve with Dial.

#### Three-Way Valves.

but that they themselves have adopted one way which they believe to be the best. The company, however, make valves for devious ways and the illustrations given herewith show their new three-way valves, with and without dials. These valves are adapted for use by gas and gasoline engine makers, automobile manufacturers and others. They are made out of the best quality of close grained red valve metal, and the reputation of the manufacturers assures the workmanship being of the best. The company issue a circular and price-list giving full description of these valves.

#### Whipple Gives Children an Outing.

It has been the custom of William L. Whipple, one of the stove dealers and plumbers of Providence, R. I., to kindly remember the little folks of the Grace Memorial Home with a sleigh ride in the winter season and an outing in the summer. On August 14, through his kindness, the children of the Home, 35 in number, accompanied by Miss Mary Todd, matron, were given an outing in Roger Williams Park. The children were taken in two large wagons, and alighting in the fine grove on the border of the lake, a visit was made to the menagerie and the merry-go-round. Luncheon was served later in the afternoon under the trees. The party returned from the park about six o'clock in the evening. The Grace Memorial Home is a day nursery where children are cared for while their parents are employed, the children being left in the morning and called for at night.



## The Tin Plate Situation.

Conflicting accounts have appeared in the daily press concerning the attitude of the tin plate workers to the proposition of the American Tin Plate Company, which contemplated co-operation between the mills and the men to secure a part, at least, of the drawback tin plate business. As we understand it the situation is this:

As early as three years since conferences took place between the tin plate manufacturers and the officials of the Amalgamated Association looking to the development of some plan by which there could be secured to American mills the work of manufacturing those tin plates which are imported by canners, oil refiners and others and are re-exported under the drawback clauses. Finally this year the officers of the association unanimously assented to a proposition that the men accept a reduction of 25 per cent. from the scale of wages which is in force for domestic tin plate, to be applied exclusively to the drawback plate production. These negotiations were kept quiet, and when the proposition was finally submitted to the lodges for a vote the local officials of the American Tin Plate Company and the officers of the Amalgamated Association were relied upon to fully explain the scope and aims of the movement. It appears that in this they were not generally successful since many of the members of the labor union believed that there was behind the proposition some ulterior motive inimical to their interests. As we understand it, a two-thirds vote of the lodges was necessary to carry the measure. This was not secured. Some of the reasons for this failure should be stated in order to reach an understanding of subsequent events.

Many of the men being Welshmen have been influenced by the pleadings of their fellow workmen in Wales with whom they appear to carry on an active correspondence. They were induced to vote adversely on the ground that they would be taking the bread out of the mouths of their fellows in the old home.

It appears, too, that the impression got abroad that if these propositions were rejected it would affect principally the smaller mills, since they would be the ones to close down from a scarcity of work. The men of the larger mills concluded that the matter therefore did not interest them directly and on general principles voted against the proposals of the American Tin Plate Company.

Finally the independent mills were a factor in the situation. The owners and managers of the majority of them, under the impression that in some way the new arrangement would work adversely to them, did all within their power to secure a negative vote in the lodges connected with their plants.

There is no evidence to show that there has been a change of heart among the Welshmen, but it is quite clear that the men of the larger mills now view the situation differently. One of the mills belonging to this class has reconsidered the adverse action taken and has voted in favor of acceptance.

While the managers of one of the most important independent plants have from the first given the movement their cordial support, the officers of at least one mill who worked against it have now changed their attitude after a frank discussion of the matter.

At the present time the lodges are reconsidering the vote taken and it is possible that the necessary majority may yet be secured.

It may be well to note that the workmen have not alone been called upon to bear the burden of what sacrifices are necessary to secure the work of producing the drawback plates required in this country. The sellers of raw materials and of supplies have also agreed to make prices which will contribute to bring about a favorable result. Nor is the drawback tin plate business alone at stake, amounting, as it does, from 1,250,000 to 1,500,000 boxes annually. It is believed that a good share, notably of the Canadian tin plate business, estimated at about 400,000 boxes annually, may be secured and the hold be strengthened on the Pacific Coast and Alaska business.

The American Tin Plate Company have in the past secured a certain amount of the drawback plate con-

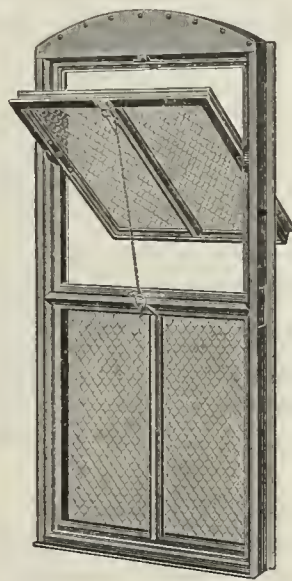
sumption, but at sacrifices which were impossible to bear any longer, and which would have been utterly out of the question when dealing with the whole trade.

If the final vote should be adverse the American Tin Plate Company will be under the necessity of keeping a part of their capacity idle. Since there has been a considerable growth of the capacity of the independent mills, the possible output of all the works of the country is considerably in excess of the domestic requirements. It is not to be supposed that the dominant consolidation will, in the long run, look with indifference upon the growth of the outside works and there is thus a possibly distant prospect of close competition for the domestic market which may be reflected in a declining tendency in wages. The acquisition of the drawback plate business would put eventualities of this kind at rest for the future and would secure not alone to the tin plate workers but to the makers of the raw materials an important amount of work at wages adequate under the circumstances.

The exact methods by which the drawback business would be segregated from the domestic business and the wages be determined have not been discussed, but we understand that assurances satisfactory to the officers of the Amalgamated Association on this point have been given.

## The Sykes Steel Window.

The Sykes Steel Roofing Company, sheet metal contractors, of Chicago, are making a fire proof window, composed of galvanized iron or sheet copper and wired glass. The frame is hollow, so as to provide for an air



*The Sykes Steel Window.*

chamber. The company make either a window with a pivoted sash, as illustrated herewith, or a sliding window. The underwriters' associations are accepting these windows in place of the ordinary wood window with the fire shutter, which makes a great economy in the construction of the building. Besides this the window has a great many advantages over the ordinary wood window and fire shutter, inasmuch as the window is always in position, while fire shutters have to be closed. Frequently, when a fire happens in the day time there is not the time, or the employees or those who have charge of the matter forget to close the shutters. Consequently, fire in an adjoining building often enters and does great damage. The labor saved in the opening and closing of the shutters alone is considerable.

The fire will crack the wired glass, but it will stay in position. In numerous instances, it is claimed, fires have been confined to one building through the use of these fire proof windows, where otherwise a great deal of damage would have been done. This was particularly illustrated when the Armour glue factory burned down at the Union Stock Yards in Chicago, when the curled hair building stood within 20 feet of it and the fire was confined to the glue works on account of these fire proof windows. The Sykes Steel Roofing Company, 611 South Morgan street, Chicago, Ill., will be glad to furnish information to any who are interested in these windows.

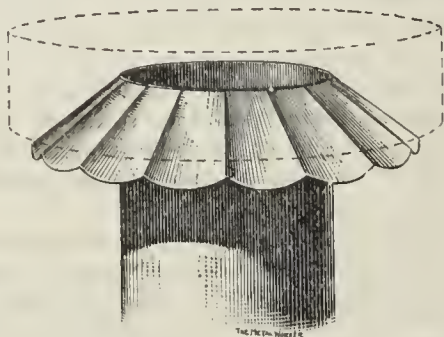


## PATTERN FOR VENTILATOR BREAST.

**PROBLEM.** Where a fluted, flared breast, whose outline is a true circle, intersects a cylinder, to find the pattern for the fluted breast.

A correspondent at Hazleton City, Pa., asks that the method of obtaining a correct pattern for a flared breast for a ventilator, such as is shown in Fig. 1, be given in *The Metal Worker*.

The first step necessary is to correctly draw a plan and elevation, as is shown in Fig. 2. Draw any center



Pattern for Ventilator Breast.—Fig. 1.—Perspective View of Ventilator Breast.

line, as R B; and, using any center point, as C on that line, with a radius equal to the half diameter of the ventilator, describe the semicircle D E F. Place the horizontal width of the breast in plan, as shown by F G, and with C as center and G C as radius describe the semicircle G H I, which divide into as many parts as this sort of breast is to have flutes—in this case, eight.

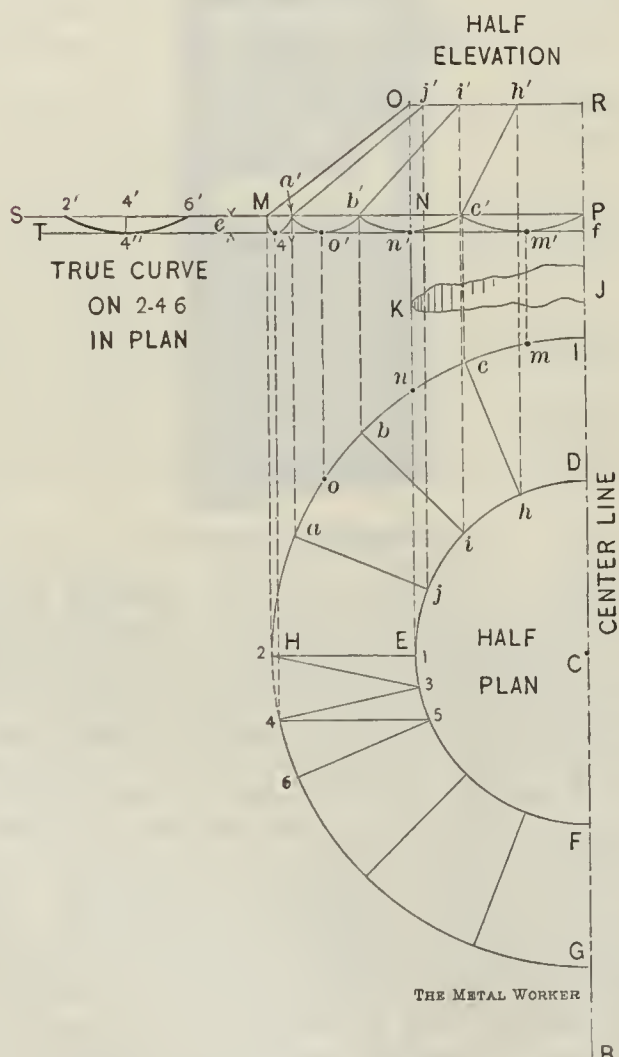


Fig. 2.—Plan, Elevation and True Curve.

From these eight divisions draw lines toward the center C intersecting the inner semicircle D E F, as shown.

Directly above the half plan construct the half elevation. Draw J K O R, which shows the ventilator pipe. Locate the point P on R J so that R P will be the vertical height of the breast. At right angles to R J draw P M, making it equal to the diameter of the larger semicircle in plan. Parallel to the center line R B and

from the intersections H a b c and I erect lines intersecting M P at M a' b' c' and P respectively. In similar manner from the intersections E, j, i, h and D in the plan erect perpendicular lines, intersecting the top of the breast at O, j', i', h' and R respectively. Draw lines from O to M, j' to a', i' to b' and h' to c'. Establish at pleasure the depth of the flute in elevation, measuring downward from the point M, as at e, and draw the line parallel to M P, as shown by e f. This line will represent the depths of the flutes at their center points between the lines H a, a b, b c and c I in plan, as at 4, o, n and m. From 4, o, n and m, and parallel to R B erect lines intersecting the line e f at 4v, o', n' and m' respectively. Trace free hand curves through the points M, 4v a', a' o' b', b' n' c' and c' m' P. This represents

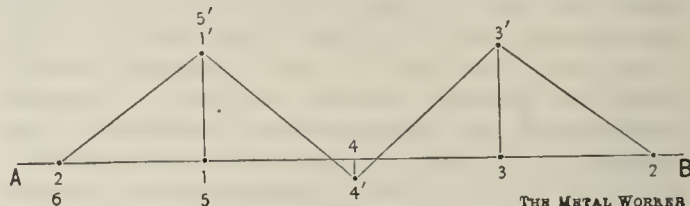


Fig. 3.—Diagram of Triangles.

the true half elevation of the breast at the bottom of the flutes.

The next step is to obtain the true curve on 2 4 6 in plan. Extend the lines P M and f e in elevation, as shown by P S and f T. On M S place the stretchout of 2 4 6 in plan, as shown by 2' 4' 6'. At right angles to 2' 6' and from 4' drop a line intersecting the line f T at 4". Then trace a free hand curve through 2' 4' 6', as shown, which is the true curve on 2 4 6 in plan. In this case the curve 2 6 in plan is divided into two parts, but in practice more spaces must be used. From the point 4 draw a line toward C intersecting the ventilator pipe at 3.

As the pattern will be developed by triangulation a set of triangles will be constructed, as shown in Fig. 3, in which draw any horizontal line, as A B, upon which place the stretchout of 1 2, 2 3, 3 4, 4 5 and 5 6 in plan in Fig. 2, as shown by similar numbers on the line A B in Fig. 3. At right angles to A D and from the points 1 and 3 erect lines equal in height to N O in elevation in Fig. 2, as shown by 1' 5' and 3' in Fig. 3. Draw lines from 1' to 2 or 5' to 6 and 3' to 2, which will represent respectively the true lengths on 1 2, 5 6 and 3 2 in plan

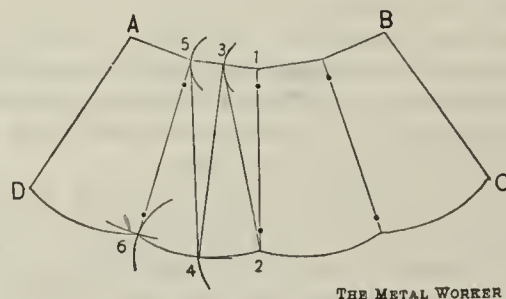


Fig. 4.—One-quarter of Full Pattern.

in Fig. 2. In similar manner at right angles to A B in Fig. 3, and from the point 4 draw the line 4 4' equal in height to 4' 4" in true curve in Fig. 2. Draw lines in Fig. 3 from 3' to 4' and 4' to 5', which will represent respectively the true lengths on 3 4 and 4 5 in plan in Fig. 2.

For the pattern proceed as follows: Draw any vertical line, 1 2, in Fig. 4 equal in length to 1' 2 in Fig. 3 or O M in elevation in Fig. 2. With 1 3 in plan as radius, and 1 in Fig. 4 as center, describe the arc 3, which intersect by an arc struck from 2 as center and 2 3' in Fig. 3 as radius. Now with 2' 4' in the true curve in Fig. 2 as radius, and 2 in Fig. 4 as center describe the arc 4, which intersect by an arc struck from 3 as center and 3' 4' in Fig. 3 as radius. Now, with 3 5 in plan as radius in Fig. 2 and 3 in Fig. 4 as center draw the arc 5, which intersect by an arc struck from 4 as center and 4' 5' in Fig. 3 as radius. Then using 4' 6' in the true curve in Fig. 2 as radius and 4 in Fig. 4 as center, describe the arc 6, which intersect by an arc struck from 5 as center and 5' 6 in Fig. 3 as radius. Trace a line through the intersections thus obtained in Fig. 4; then



will 1 5 6 2 be the pattern for one flute. As many flutes can be joined together as desired. In Fig. 4 four are shown, thus making A B C D one-quarter of the full pattern. Slight bends are required along the lines shown by the small dots, so that A B will form to the shape of the ventilation pipe F E D in plan in Fig. 2, and each of the flutes, as 2 6 in Fig. 4, will take the shape of the true curve in Fig. 2.

### The Quality of Galvanized Sheets.

In assigning a cause for the oxidation of galvanized iron sheets, it is necessary, says the London *Ironmonger*, to look a little further than the bars which form the basis of manufacture. It is sometimes assumed, all too hastily, that oxidation is due to the use of acid steel bars in the production of the black sheets. That, however, is not necessarily the case. Acid bars are used in several works where sheets rarely, if ever, go wrong. The cause of the trouble, generally speaking, is defective drying. Unless the sheets are dried thoroughly before they are packed they are apt to sweat considerably on the voyage, especially in tropical seas, and the moisture thus produced sets up the chemical reaction which produces oxidation. The trouble is sometimes accentuated by inefficient pickling. Unless the black sheets are pickled until they are clean almost to whiteness it is next to impossible to give them a satisfactory coating of spelter. The sheet may become covered well enough to pass superficial inspection, but on being subjected to fluctuations of temperature the unequal expansion of the iron and the spelter causes the latter to blister and eventually to peel off. The susceptibility of the sheets to corrosion is thereby much increased. Yet another contributory cause is defective annealing. If properly annealed the sheets when galvanized will stand any amount of handling without the slightest risk of damaging the spelter. If they are not so annealed the spelter is apt to crack and chip on being subjected to the rough usage of the warehouse and the quay. It will thus be seen that the primary cause of oxidation in galvanized sheets is scamping in the workshop. This in turn may be due to the employment of unskilled men, or—as is more often the case—to the cutting of prices.

The paradox that cheap things are dearest holds good especially in the case of galvanized iron sheets. If they are to be good and of durable quality they cannot be made "cheaply." If the price is to be cut, some process in their manufacture must necessarily be slurred over or omitted. Some makers leave out the annealing and thereby save about 10 shillings per ton, without affecting the appearance of the sheets. Sheets which have not been annealed look very much the same, when galvanized, as those which have. The spelter on such sheets, however, suffers considerably during the corrugating process, the pressure required being almost enough to cause it to disintegrate. Sheets produced in this way are difficult to fix. They are apt to warp, and even when quite flat they cannot be easily adapted to uneven supports. A more serious trouble, however, is that they are not durable, and are rapidly affected by exposure to the air. Another false economy is to stint the spelter. Here, again, a few shillings can easily be "economized" in the cost of manufacture, but the consumer pays dearly in the long run for the accommodation. Even when such "scamping" manufacturers have done their worst there is only a difference of a few pence per sheet between the price of their stuff and that of the highest qualities of galvanized sheets produced in the trade. Yet it is just those few pence which often determine where an order shall be placed.

A perfect sheet must be annealed, pickled, dipped and dried. Each process must be carried out thoroughly and the best available materials must be employed. If all this has been properly done the crystallization appears as a beautiful white pattern on a deep blue ground. Such a sheet will remain bright and fresh for an almost indefinite period, and it will outlive three or four inferior sheets.

THE NATIONAL FIRE PROOFING COMPANY suffered a \$25,000 loss by fire last week at their plant at Niles, Ohio. Much valuable machinery was destroyed.

### PERFECTED GRANITE ROOFING.

A very attractive catalogue which has recently been issued by the Eastern Granite Roofing Company, with offices in the Gerken Building, Chambers street and West Broadway, New York City, describes in admirable style the variety of uses to which their products are adapted. The company make the important claim that they have the original stone surfaced roofing, which is scientifically made by skilled workmen on especially constructed machinery. Every roll of roofing is rigidly inspected before leaving the works, so as to meet in every respect the claims made for it. The company point out that the material which they are furnishing is well adapted for covering old shingle roofs, its pliability permitting it to so conform to the shingles as to render it practically impossible to notice the old roof underneath. The claim is also made that where their perfected Granite Roofing is used water which may collect on the roof is not tainted in any way and can therefore be used for household purposes. Reference is also made to the fire resisting qualities; and it is stated that trimmings covered with the roofing are rated by insurance companies the same as those covered with tin or gravel roofing. The company have enjoyed a large business the present year and a short time ago found it necessary to add new equipment and otherwise improve their manufacturing facilities. They now have a very large capacity for making granite roofing and are in a position to promptly fill all orders with which they may be intrusted. The catalogue above referred to is illustrated by means of full page half-tone engravings, while the text sets forth the merits of the company's productions.

### A Humanitarian Suggestion.

A manufacturer who employs a great many presses reports a curious accident. A pile of blanks ready to be drawn, standing alongside of the press, fell over while the operator happened to have his hand under the die, and these blanks fell on the treadle, releasing the clutch, causing the punch to descend on his hand. This occurrence suggests the desirability of putting a wooden box around the treadle or a shelf over it, in such a way that if anything falls it will not hit the treadle, leaving room, of course, between the treadle and the top of the box for the foot. This idea, suggested by the occurrence, may be worth the consideration of those of our readers who are operating similar machinery.

### FLASHINGS.

JAMES A. MATHEWS, formerly manager of the Crescent Tin Plate Company of Cleveland, Ohio, has become the manager of the real estate department of the Guardian Trust Company of that city.

JOHN HENRY of Carnegie, Pa., who was the general manager of the Chartiers Iron & Steel Company, before their absorption by the American Sheet Steel Company, was killed on August 16 by a train at the Fourth avenue station of the Pan Handle Railroad in Pittsburgh. Mr. Henry was struck by the train while attempting to cross the tracks and died at the Mercy Hospital as a result of his injuries. Mr. Henry was on his way to start for a vacation trip to Michigan and was trying to catch his train at the time the fatal accident occurred.

To keep pace with their rapidly increasing business, Knisely Brothers, 99 Bunker street, Chicago, manufacturers of Sheet Metal Windows, are building a two-story structure, 226 x 126 feet, at Twenty-eighth street and Fifth avenue, to cost \$40,000. The company expect to move into their new quarters about September 15.

GROUND has been broken at Canton, Ohio, for the plant of the United Steel Company, mention of which enterprise has already been made in this paper. The plant will include three open hearth furnaces and a rolling mill. The latter will be a 34-inch mill and its output will be Universal Plate, Skelp and Tin Bars. The main building will be 100 x 400, and a second building will be 55 x 100. The company have secured 5 acres of ground and the plant is designed so that it can be duplicated at any time. Contracts have been placed with the



Fort Pitt Bridge Company of Pittsburgh for the structural material and erection.

THE plant of the International Metal Lath Company, Niles, Ohio, was last week destroyed by fire. The loss will reach \$25,000.

THE DOUBLE TRUSS CORNICE BRAKE COMPANY, 1453 Niagara street, Buffalo, N. Y., are sending out an eight-page circular illustrating and describing their Double Truss Cornice Brake for bending and forming sheet metal, also their Electric City Gutter Former, both of which machines have been illustrated and described in our columns. A long list is presented of concerns all over the country who are using these machines.

THE FRED. J. SWAINE COMPANY, St. Louis, Mo., report their factory well filled up with enough orders for Presses, Dies and other special Machinery to keep them busy for some time to come. The company's new factory at Seventh and O'Fallon streets is well under way, and they expect to have it ready for occupancy about September 1. The plant will be thoroughly up to date in every respect, and equipped with all the latest and most modern appliances.

THE CLARK NOVELTY COMPANY, Rochester, N. Y., are sending out their 1902 catalogue devoted to the Clark kerosene oil system of heating tools and furnaces for different kinds of mechanical work. The apparatus consists of an air compressor, a compressed air tank, an oil tank and piping to bring a jet of air and oil to a mixing chamber, where it is heated to burn with a flame of intense heat in a furnace constructed to suit the work in hand. This system has been used by canned goods packers, tinware manufacturers and cornice makers, where a large number of workmen are using hot soldering coppers. The catalogue gives full description of the various apparatus and the burners. It also shows forges for the use of steel workers or braziers.

J. H. FULMER, Nazareth, Pa., is distributing a neat little booklet illustrating and describing some of his specialties. These include the Eagle and Eureka Snow Guards, also the Fulmer Wire Snow Guard, which is his latest production. Mr. Fulmer makes a line of Slaters' Tools, including Hammers, Rippers and Stakes; also the Universal Slate Puncher and Shaper, which is equipped with sets of knives for cutting Slates into any shape desired, and the Star Slate Puncher.

MESKER BROS. of St. Louis, Mo., who are the contractors for the Galvanized Iron Cornice, Ceiling and the Tin Roofing of the new Opera House in Durango, Mexico, have the work well started, a good deal of the Cornice being in place and the roofing ready to lay. The work is in charge of Charles Carle. The job is a large one, and the class of work a pleasing innovation in building in that locality, both in the matter of decoration and utility. About 300 squares of Tin will be used in the roof. When completed the Opera House will cost \$500,000, Mexican.

THOSE in Galveston, Texas, who have roofing and sheet metal work to do, or are in need of Ventilators and Skylights, are likely to place their orders with H. C. Opperman, 1811 Market street, who is attracting attention to his facilities by sending out a very appropriately illustrated desk blotter that will be a continual reminder.

CHARLES MCSHERRY, manufacturer of Sheet Metal Working and Special Machinery, Pittsburgh, Pa., has been awarded the contract for nine Enameling Ovens for the plant of the General Fire Proofing Company, Youngstown, Ohio.

IT is reported that H. Adler & Co. of Pittsburgh, Pa., have concluded the purchase of 3 acres of land at Carnegie, Pa., from the John Dunlap Company, and will erect thereon a large Sheet Iron plant.

WAITE, RANLETT & Co., 80 Broad street, Boston, Mass., who are jobbers and dealers in Sheet Iron, Tin Plates, Sheet Copper and Metals, report an excellent seasonable demand in that territory.

A conference of the malleable iron founders was held at the Auditorium Hotel, Chicago, last Wednesday. Arrangements are being made for a combination of interests with a capital supposed to be between \$15,000,000 and \$20,000,000. Nothing tangible, however, has been accomplished.

## The Taylor Quick Adjusting Self Locking Clamps.

James L. Taylor, 30 Lawrence street, Newark, N. J., is offering the clamps shown herewith. In Fig. 2 a portion of the sliding head is cut away, showing the hardened oil tempered serrated steel gripping blocks, one of which is at the bottom of the bar and the other at the



Fig. 1.—The Taylor Clamp No. 10.

top of the bar in the rear part of the head. In a corresponding position, in the front part of the sliding head, is a V-shaped steel spring. The gripping principle is the same in all the clamps. The steel blocks are file tested and the serrated faces are milled in. The screws are of steel, and the seats on the stationary jaws are finished square and true with the bars, so that the clamps will grip the work true. The malleable portions of the clamps are made of air furnace refined malleable iron. The point is made that as there are no serrations

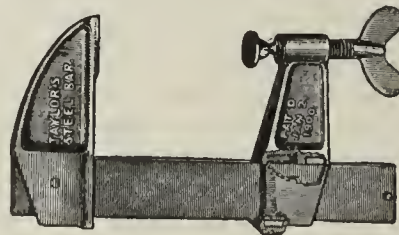


Fig. 2.—The Taylor Steel Bar Screw Clamp No. 20.

on the bars a much finer adjustment is obtained, and that the bars are not weakened. Clamp No. 10 is all of malleable iron, and is made in six sizes, to open from 3 to 12 inches. Clamp No. 20 has a steel bar, and is designed for use by cabinet, carriage, piano and pattern makers; also for furniture makers and repairers, &c. Clamp No. 25 is a steel bar carpenter's clamp, with a stationary head, in which the screw works. It is explained that the sliding heads can be instantly opened or closed the full length of the bars and yet are locked for clamping purposes wherever they are left. In operation the sliding head is opened wider than the work to

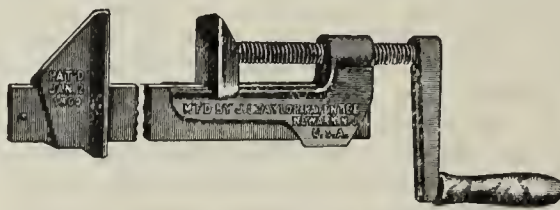


Fig. 3.—The Taylor Carpenter Clamp No. 25.

be clamped, the clamp is then placed in position; the pressure of one finger slides the head against the work when two or three turns on the thumb screw applies the power. The point is made that owing to the fact that the screws are not used in adjusting a much finer and more powerful thread can be used, and that the clamping action is positive, as the greater the strain the tighter the grip. All clamps are tested to over 1400 pounds clamping strain, it is stated, before leaving the factory.

The compilers of this year's city directory claim a population for Cleveland, Ohio, of 453,537, an increase of 23,400 over last year. Cleveland is rapidly becoming one of the great cities of this country.

Seventy-eight profit sharing enterprises, affecting 53,526 workpeople, were in operation in Great Britain last year.

It is claimed that an experimental balloon recently attained an altitude of 12 miles, recording a temperature of 80 degrees F. below zero, at Berlin.



## THE LETTER BOX.

*Inquiries in regard to practical questions of general interest are invited, in reply to which we shall be glad to receive suggestions and information from our readers.*

*Correspondents are requested in all cases to give their names and addresses, which will not, however, be published or disclosed without their consent.*

### WHO MAKES FUEL OIL BURNERS?

Owing to the development of new oil fields and the higher prices of coal, due to the coal strikes, we are constantly receiving the inquiry, who makes burners suitable for use for crude and refined oils in hot air furnaces and steam and hot water boilers, and also for heating stoves for domestic use and kitchen stoves? We should esteem it a favor if any of our readers who have used such apparatus that has proved satisfactory would give us the address of the manufacturers or send us circulars showing these devices. If any special method of piping, placing or arranging these devices, has been discovered of special advantage we shall be glad to have these facts brought to our attention.

### A ROOF AROUND A TREE.

From J. N., Washington, D. C.—I am sorry you have not been able to evoke an answer from some one to my inquiry in *The Metal Worker* of August 2 as to the best way of making a roof tight around a tree. While I am still open for suggestions, I will admit that I do not like my original plan as well as an idea I got a few days ago. I propose to make a casing of galvanized iron from the floor of the room to 6 inches above the roof and give the tree 3 inches play all around at the top. The casing will be made in halves, bolted together, covered with expanded metal and plastered and papered like the rest of the room. This will be an improvement in many ways over my old plan, and the extra room it takes up will be more than offset by the appearance, while promoting the health of the tree. This is such an unusual job that I should like to hear from others on the subject.

### BURSTING SEAMS IN GUTTER.

From J. P. F., Hartford, Conn.—I have noticed the article in the Letter Box of August 9 regarding the bursting of seams in gutters. My comment on the same would be that there is a great deal more construction and expansion in copper than in any other metal. Your suggestion as to soldering the seams is good. I have had an experience of 20 years in general roofing work, and have been a close observer.

### WANTS REPAIRS FOR TOBASCO GASOLINE FURNACE.

From John J. Higinson, Jr., Nyack, N. Y.—I desire to learn where I can secure repairs for the Tobasco gasoline furnace having a double burner. It was manufactured by the D. M. I. Mfg. Company of Detroit, who sold out to a concern in Rochester, N. Y., but I am unable to locate them, and shall be glad if some reader of *The Metal Worker* can give me the desired information.

### INDIVIDUAL VERSUS CENTRAL STATION HEATING SYSTEMS.

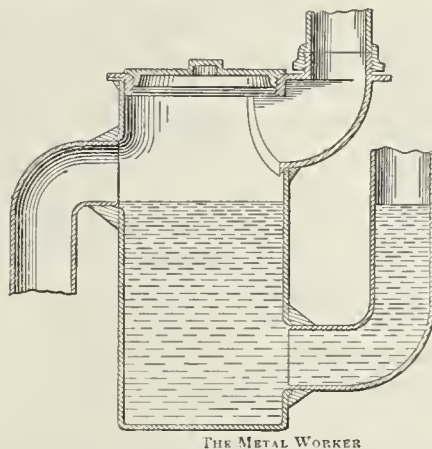
From J. H., Berlin, Ont.—Can you inform me of the approximate cost of heating a house of standard size from the central station heating system as compared with heating a house with a separate plant?

Note.—We shall be glad if those of our readers who have had experience in such problems will give their views for the benefit of this correspondent. For his information, we would say that it is a custom with companies who operate central station heating systems to charge from 15 to 25 cents per square foot of radiation per season, according to the cost of fuel in the locality where the plant is operated. In laying out steam heating plants it is the custom with some to calculate that 1 square foot of radiation will heat from 40 to 50 cubic feet of space in a building of good construction. With

this information it is probable that our correspondent can reach an approximate conclusion.

### A QUESTION FOR PLUMBERS.

From D. & E., Jackson, Miss.—We should be glad if the experienced plumbers who read *The Metal Worker* will give us their views as to the plumbing devices



A Question for Plumbers.—Fig. 1.—Specially Constructed Drum Trap with Vent and Cover.

shown herewith. Fig. 1 shows a drum trap which has a special vent connection, as shown in Fig. 2, and Fig. 3 shows the application. It is a combination cleanout cover and vent coupling adapted for use in connection

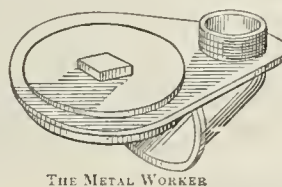


Fig. 2.—View of Vent and Cover.

with lead drum traps. As both traps and the ventilation of them have been discussed in *The Metal Worker*, doubtless some of the readers may have views as to whether this method of constructing a trap and connecting it in

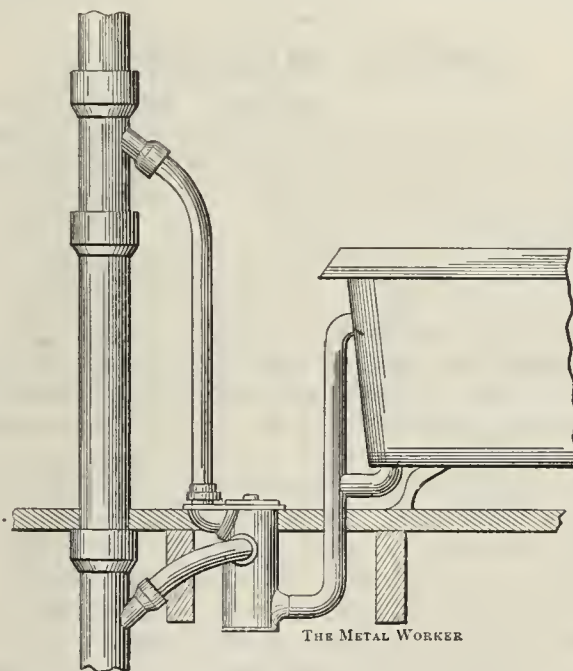


Fig. 3.—Showing Application of Trap.

a plumbing system is in accordance with the latest sanitary rules.

### PATTERN FOR AN OBLIQUE FUNNEL BOTTOM.

From Subscriber, Camden, Ind.—I would like to learn how to lay out the pattern for a funnel bottom for a round can, the point of the funnel being directly under the side of the can.

Answer.—The method of making the pattern for this, which is the frustum of a scalene cone, is described in Problem 167 in "The New Metal Worker Pattern Book."



# TRADE REPORT.

## MARKET SUMMARY.

**Pig Tin** is very quiet, and prices are somewhat irregular.

**Copper** has declined in price, and continues very dull.

**Pig Lead** is quiet and firm.

**Spelter** continues scarce, and rules about  $\frac{1}{4}$ c. higher for spot.

**Antimony** is dull and weak.

**Nickel** is in fair demand at unchanged prices.

**Aluminum** is firm and in good demand.

**Tin Plates** are very dull, and without quotable change in price.

**Black Sheets** are dull and a shade lower.

**Galvanized Sheets** are rather firmer, but in light demand.

**Scrap Iron** is very active and considerably higher.

**Scrap Brass and Copper** are weak and dull.

**Scrap Zinc** is  $\frac{1}{4}$ c. higher.

**Foundry Iron** continues extremely scarce, with prices normal.

**Sheet Copper** is in fair demand, and firm in price.

**Sheet Zinc** is moderately active and very firm.

**Hardware** is active for the season, with prices strong in almost all lines.

**Plumbers' Supplies** are active, and prices rule firm.

**Wire Nails** are in fair demand, with prices well maintained.

**Cut Nails** are unchanged.

**Wire** is in better demand, and prices are firm.

**White Lead** is quiet, with prices unchanged.

**Linseed Oil** has declined 7c. per gallon.

**Spirits Turpentine** is more active, and  $\frac{1}{2}$ c. per gallon lower.

## METAL MARKET.

NEW YORK, August 22, 1902.

**Tin.**—At the end of last week a little better demand was developed in the Tin market here, and wholesale prices were pushed up to 28 $\frac{1}{2}$ c. for spot stock. The London market followed with a sharp upward movement. Since that time prices have again sagged, both here and there to about the figures given in our last report and the market has relapsed into dullness. At the close the market was rather irregular. Jobbers quote Straits Pig in small lots from 29c. to 29 $\frac{1}{2}$ c. per lb. The arrivals so far this month aggregate 2969 tons and will probably reach 3200 tons for the entire month.

**Copper.**—The Copper market has continued extremely dull and uninteresting throughout the week with prices seeking a lower level. Exports have fallen off considerably, amounting to about 5000 tons this month. A decidedly weak tone characterized the market for Copper at the close. Consumers have been limiting their purchase to small quantities for immediate requirements and are waiting further developments in the market. Jobbers' prices have been reduced about  $\frac{1}{2}$ c. Lake Ingot in small lots is now quoted at 12 $\frac{1}{2}$ c. to 12 $\frac{3}{4}$ c. per lb., and Casting Copper at 12 $\frac{1}{4}$ c. to 12 $\frac{3}{4}$ c.

**Sheet Copper.**—A fairly active demand for Sheet Copper continues and the outlook is regarded as favorable for a good business in the near future. Prices remain firm on the basis of 18c. per lb. for Sheet Copper from store.

**Pig Lead.**—The market is entirely without change here. The volume of business is of moderate dimensions and prices remain firm. American Pig in small lots is quoted at 4.45c. to 4 $\frac{1}{2}$ c. per lb. St. Louis advices report that the Lead market at that center is showing no particular activity, prices being well maintained.

**Spelter.**—The market for this metal maintains its firm tone. Spot is still very scarce and prices have ad-

vanced. Jobbers quote good Western brands in small lots at 6 $\frac{1}{2}$ c. to 6 $\frac{3}{4}$ c. per lb. St. Louis advices indicate that all of the offerings in the Spelter market there have been well taken and a marked scarcity of any spot material is noted. Prices rule strong.

**Sheet Zinc.**—The demand for Sheet Zinc is of the usual proportions, and prices are firm and unchanged at 6 $\frac{3}{4}$ c. per lb. for 600-lb. cask lots and 7 $\frac{1}{4}$ c. to 7 $\frac{1}{2}$ c. for smaller quantities.

**Antimony.**—No change is noted in this metal, except that prices are hardly as firm as formerly. Cookson's, in small lots, is quoted at 10c. to 10 $\frac{1}{4}$ c. per lb., Hallett's at 8 $\frac{3}{4}$ c. to 8 $\frac{1}{2}$ c. and U. S. at 8 $\frac{1}{4}$ c. to 8 $\frac{1}{2}$ c.

**Nickel.**—No change is noted in this metal, retail quotations ruling at about 55c. to 60c. per lb. for small lots.

**Aluminum.**—The demand for Aluminum continues active and prices remain at their former level, small lots of No. 1 Ingot, guaranteed 99 per cent. pure, being quoted at 37c. per lb. and 100-lb. lots at 35c.

**Tin Plates.**—The market is without any new features. The consumptive demand is tame and prices show no quotable change. The American Tin Plate Company are quoting for delivery up to December 1 on the base price ruling for the past year or more. Stocks are understood to be ample to meet all requirements, and the closing down of so many mills is likely to head off any possible surplusage of Plates. There is some irregularity in prices, but jobbers have not changed their quotations, which rule at about \$4.70 to \$4.90 per box for American Bessemer Coke Plates, I. C., 14 x 20, in moderate sized lots, delivered at New York or corresponding points.

**Sheets.**—The market for Black Sheets is extremely quiet, with almost entire absence of inquiries for large lots. Heavy Sheets are moving in better volume than the lighter gauges, which are quite a drag upon the market. Galvanized Sheets seem to be a trifle firmer, and there is not so much talk of cutting. The manufacturers claim that there is now absolutely no profit in galvanizing, as the differential between Coated and Black Sheets is less than formerly, while the price of Spelter is much higher. Stocks in jobbers' hands are ample to meet all the current requirements, and prices have not the same stiffness that characterized them a while back. Jobbers quote No. 27 One Pass Cold Rolled Soft Steel Sheets, in small lots, at 3.60c. to 3.65c. and No. 27 Galvanized Sheets at 4.45c. to 4.60c.

Chicago advices are as follows: No new features have been developed, supplies being more than ample to meet the moderate demand. Quotations are as follows: No. 27 Black Sheets, in small lots from store, 3.45c. to 3.55c. Galvanized Sheets, in small lots from store are sold at 4.55c. to 4.65c. for No. 27.

**Old Metals.**—The market for Scrap Iron is very active. Consumers are taking about all the material that is offered, and prices have stiffened. Scrap Brass and Copper have weakened, in sympathy with the decline in raw Copper. Scrap Zinc is higher and very firm. Dealers are paying about the following rates for moderate sized lots delivered at New York or corresponding points:

|                                        |                            |
|----------------------------------------|----------------------------|
| Heavy Copper.....                      | per lb. 10 c.              |
| Light and Tinned Copper.....           | per lb. 9 c.               |
| Heavy Brass.....                       | per lb. 8 c.               |
| Light Brass.....                       | per lb. 6 $\frac{1}{2}$ c. |
| Lead.....                              | per lb. 3 $\frac{3}{4}$ c. |
| Tea Lead.....                          | per lb. 3 c.               |
| Zinc.....                              | per lb. 3 $\frac{1}{2}$ c. |
| Pure Aluminum Sheet.....               | per lb. 22 c.              |
| Cast Aluminum.....                     | per lb. 17 c.              |
| No. 1 Pewter.....                      | per lb. 18 c.              |
| No. 2 Pewter.....                      | per lb. 9 c.               |
| Tin Plate Scrap, per gross ton.....    | to \$5.00                  |
| Wrought Iron Scrap, per gross ton..... | \$15.00 to 15.50           |
| Heavy Cast Scrap, per gross ton.....   | 13.50 to 14.00             |
| Stove Plate Scrap, per gross ton.....  | 10.00 to 10.50             |
| Burnt Iron, per gross ton.....         | 8.00 to 8.50               |

THE INTERNATIONAL MICA MFG. COMPANY of Columbus, Ohio, will, it is reported, build a large plant at Huntington, Ark.



THE PIG IRON MARKET.

NEW YORK.—The market in this district is not particularly active so far as domestic Pig Iron is concerned. Founders generally are not buying much for extended delivery, because there is due to them a good deal of Pig Iron on old contracts of which a considerable tonnage must go over to next year. The Anthracite strike contributes to this greatly. It must also be noted that consumers close to tidewater have foreign material to fall back upon. There have been considerable sales of foreign Pig in the earlier part of the week under review. Spot Iron is difficult to quote. Small lots of No. 2 Lehigh have changed hands at \$23 to \$24, tidewater. For delivery in 1903 the following quotations are made: Northern Iron, at tidewater, No. 1 X, \$23.25 to \$24.75; No. 2 X, \$22 to \$22.75; No. 2 Plain, \$21 to \$21.75. Tennessee and Alabama brands, in New York and vicinity, No. 1 Foundry, \$22.25 to \$23; No. 2 Foundry, \$21.25 to \$22; No. 3 Foundry, \$21 to \$21.25.

CHICAGO.—The Coke famine has assumed a most serious aspect for furnaces in this section. Several Northern furnaces are already banked and others expect to be compelled to do likewise in the course of a few days. This is the most prominent feature of the Pig Iron situation. The demand for next year's delivery continues without any perceptible decrease, many of the smaller consumers being in the market for various amounts ranging from 500 to 1000 tons, with one or two sales for larger quantities. The urgency of consumers' wants for quick shipment Iron is more than ever evident. Single car lots of Southern Iron have been sold at \$27.15 for No. 1 and \$26.65 for No. 2. With the exception of some 100-ton lots of No. 3 Foundry on the basis of \$17, Birmingham, sales of Southern Iron for next year's delivery have been inappreciable. The following are the prices current for the first half of 1903:

|                                         |                    |
|-----------------------------------------|--------------------|
| Lake Superior Charcoal.....             | \$26.00 to \$27.00 |
| Local Coke Foundry, No. 1.....          | 22.50 to 23.00     |
| Local Coke Foundry, No. 2.....          | 22.00 to 22.50     |
| Local Coke Foundry, No. 3.....          | 21.50 to 22.00     |
| Local Scotch, No. 1.....                | 23.00 to 23.50     |
| Ohio Strong Softeners, No. 1.....       | 25.00 to 26.00     |
| Southern Silvery, according to Silicon. | 22.60 to 23.00     |
| Southern Coke, No. 1.....               | 21.90 to 22.40     |
| Southern Coke, No. 2.....               | 21.15 to 21.65     |
| Southern Coke, No. 3.....               | 20.65 to 21.15     |
| Southern Coke, No. 1 Soft.....          | 21.65 to 22.15     |
| Southern Coke, No. 2 Soft.....          | 21.15 to 21.65     |

PHILADELPHIA.—The market is rather quiet, but considering that everything that is available or likely to be available until about midsummer of next year is already taken up it is not surprising that there is but little doing. Buyers are very anxious, however, and whenever the opportunity for placing an order can be found it is promptly accepted. The situation has been greatly relieved by the steady arrivals of foreign Iron, and many foundries and shops would have been shut down long ago, but for foreign Iron, and as it is there is a constant struggle to get enough of the best makes to keep things moving. For the present Middlesboro Irons may be quoted at about \$19.50 for cargo lots, or for small lots delivered in consumers' yards \$21 to \$21.50; Scotch Irons, according to brand, \$22 to \$24. American Irons as follows, for city or nearby deliveries during the first half of next year (with a premium of \$1 to \$1.50 per ton on this year's deliveries):

|                      |                    |
|----------------------|--------------------|
| No. 1 X Foundry..... | \$23.50 to \$24.50 |
| No. 2 X Foundry..... | 22.00 to 22.50     |
| No. 2 Plain.....     | 21.00 to 22.00     |

PITTSBURGH.—The situation is much complicated by the Coke famine, caused by lack of transportation, and many of the Valley furnaces have had to bank down. There is scarcely any Iron to be had for this year's delivery. Small lots of No. 2 Foundry have sold at \$24 and \$25. Many Northern and Southern furnaces are out of the market on Nos. 1 and 2 Foundry for next year, but No. 3 can readily be bought. About 10,000 tons of Southern Foundry have been sold in this market in the past week. The last No. 2 went at \$18, Birmingham, or \$22.15, Pittsburgh, while No. 3 can be bought at \$16.50, Birmingham, or \$20.65, Pittsburgh. Northern No. 2 Foundry is \$22 to \$22.25 for next year.

CINCINNATI.—There is still some Iron selling for the first half of 1903, but the total amount is not large and made up of sums of 500 tons and less. The market is a little bit stronger and the amount of Iron which is being offered on the basis of \$17.50 for No. 2 Foundry, Bir-

mingham, is much smaller than it has been. There is a stiffening tendency and \$18 and even \$19 for the same grade is being freely talked. Northern Iron is selling more freely for next year's delivery because the furnaces are not yet so well sold up as those of the South. The amount of Iron selling for delivery within the next 60 days, especially Foundry grades, is inconsequential. We quote, f.o.b. Cincinnati, for 1902 delivery, as follows:

|                                |                    |
|--------------------------------|--------------------|
| Southern Coke, No. 1.....      | \$24.25 to \$26.25 |
| Southern Coke, No. 2.....      | 23.75 to 25.75     |
| Southern Coke, No. 3.....      | 23.25 to 25.25     |
| Southern Coke, No. 4.....      | 21.25 to 22.00     |
| Southern Coke, No. 1 Soft..... | 22.75 to 26.25     |
| Southern Coke, No. 2 Soft..... | 22.25 to 25.75     |
| Southern Coke, Gray Forge..... | 20.25 to 20.75     |
| Southern Coke, Mottled.....    | 20.25 to 20.75     |
| Ohio Silvery, No. 1.....       | 26.10 to 26.60     |
| Ohio Silvery, No. 2.....       | 25.85 to 26.10     |
| Lake Superior Coke, No. 1..... | 26.10 to 26.60     |
| Lake Superior Coke, No. 2..... | 25.60 to 26.10     |
| Lake Superior Coke, No. 3..... | 25.10 to 25.60     |

CHICAGO REPORT.

Scrap Iron and Steel.—The offerings have been light, and there being a good outlet for dealers the market has gained in strength, and higher prices have been paid for Machinery Cast, Stove Plate, Grate Bars, Sheet Iron and Hoops, Plow Steel, Breaking Stock and Horseshoes. The following are the prices paid by dealers in carload lots, Chicago:

|                                                        | Per net ton.       |
|--------------------------------------------------------|--------------------|
| Country Wrought Scrap.....                             | \$15.00 to \$16.00 |
| Machinery Cast.....                                    | 14.00 to 14.50     |
| Malleable Cast.....                                    | 12.00 to 13.00     |
| Stove Plate (free from burnt).....                     | 10.50 to 11.00     |
| Burnt Iron and Grate Bars.....                         | 8.50 to 9.50       |
| Sheet Iron and Hoops.....                              | 9.00 to 10.00      |
| Plow Steel.....                                        | 13.00 to 13.50     |
| Breaking Stock.....                                    | 12.00 to 12.50     |
| Old Rollers—whole (Iron).....                          | 9.50 to 10.00      |
| Old Rollers (Iron) cut in single Sheets and Rings..... | 13.00 to 14.00     |
| Old Gas Pipe and Boiler Tubes.....                     | 13.00 to 13.50     |
| Cast Borings.....                                      | 9.00 to 9.50       |
| Turnings.....                                          | 12.50 to 13.00     |
| Horseshoes.....                                        | 15.00 to 15.50     |

Old Metals.—Further weakness has been developed in Copper and Brass, and prices have further declined from 1/8 to 1/2c. Zinc, however, has continued strong and other metals have been firm with moderate receipts. The following are the prices paid by dealers in this market:

|                            | Per lb.  |
|----------------------------|----------|
| Copper Wire and Heavy..... | 10 1/2c. |
| Copper Bottoms.....        | 9 1/4c.  |
| Copper Clips.....          | 10 c.    |
| Red Brass.....             | 10 1/4c. |
| Yellow Brass.....          | 8 c.     |
| Red Brass Borings.....     | 9 1/4c.  |
| Yellow Brass Borings.....  | 7 c.     |
| Light Brass.....           | 6 3/4c.  |
| Pipe Lead.....             | 3.70c.   |
| Tea Lead.....              | 3.35c.   |
| Zinc.....                  | 3.45c.   |
| Tin Foil.....              | 21 c.    |
| Pewter, No. 1.....         | 18 c.    |
| Pewter, No. 2.....         | 11 c.    |
| Aluminum.....              | 20 c.    |

Old Rubber.—An easy tone has prevailed under liberal offerings and no improvement in the outlet. Prices, however, are without essential change. Dealers buy at the following prices, Chicago delivery:

|                            | Per net ton. | Per lb. |
|----------------------------|--------------|---------|
| Garden Hose.....           | \$25.00      | .....   |
| Air Brake Hose.....        | 45.00        | .....   |
| Rubber Shoes.....          | .....        | 7 c.    |
| Rubber Car Springs.....    | .....        | 5 c.    |
| Inside Bicycle Tubing..... | .....        | 22 c.   |
| Outside Tubing.....        | .....        | 5 c.    |
| Black Rubber.....          | .....        | 4 c.    |
| White Rubber.....          | .....        | 8 1/2c. |

Rags.—Receipts have increased but little, if any, and dealers have been freer buyers at 75c. to 85c. per 100 lbs. for Country Mixed Rags, Chicago delivery.

Anthracite Coal.—The situation is more serious than at any time since the inauguration of the strike at the mines. Very little Coal is arriving, and dealers are offering \$7 a ton in carload lots. Local stocks are almost depleted, especially Grate and Egg sizes. No relief is expected by operators until late in the fall or early winter. Possibly, it is thought, operations may be resumed in November. In the meantime even higher prices are predicted. As no reliable quotations can be given we omit the usual table.

THE FANNER MFG. COMPANY, Cleveland, Ohio, are calling attention to their Arctic Fruit and Vegetable Presses, which are making quite a success. These Presses are furnished, packed, 1/2 gross in a case.



## THE HARDWARE TRADE.

A generally satisfactory state of affairs is reported throughout the country, and it is believed that the volume of business is running in excess of that of last year. This is most gratifying, as 1901 was a record breaker. In the West an increased demand is noted, which is regarded as indicating an early appearance of the expected heavy fall trade. In the East the quietness of midsummer is occasionally broken by spurts of activity, notwithstanding this is the vacation season and much increase in business is not anticipated before the middle of September. The outlook continues encouraging. The urgent demand for more rapid shipments of general hardware is still reported by manufacturers. As agriculturists have been favored with good crops, which they can dispose of at remunerative prices, and as mechanics and laborers are well employed at good wages, it would seem that the essential elements for a continuance of prosperous times have been bountifully supplied. The market is well maintained on nearly all classes of goods, few changes being noted in prices.

## NOTES ON PRICES.

**Plumbers' Supplies.**—The demand for Plumbers' and Steam Fitters' Supplies is reported as well up to the average volume for the season. Prices are well maintained throughout the whole line and in some directions, particularly in Iron Goods, an advancing tendency has been developed. The outlook is regarded as favorable for a very active fall and winter trade.

**Winter Goods.**—Manufacturers and dealers in all parts of the country report an unusual active demand for the various lines of fall and winter goods. Coal Hods, Stove Boards, Stove Pipe, &c., are all moving in large volume and, in some cases, buyers already find difficulty in securing prompt shipments. Prices on all these lines are well maintained.

**Wire.**—The demand for Plain Wire has improved recently and prices are very firm at \$2.20 from store. The closing down of a number of the mills has resulted in a considerable restriction of production, which has stiffened the market.

**Leather Belting.**—The demand for Leather Belting is good, but as the result of competition prices are somewhat lower than they were last fall, while Belting butts are high, with an advancing tendency. Members of the Leather Belting Manufacturers' Association adhere strictly to the Belting list adopted by the association November 13, 1901, but each member is at liberty to fix the discounts at which to sell his product. A uniform discount is not feasible as no two manufacturers make exactly the same grade of Belts. There is, however, a similarity in such discounts, as is shown below. These fairly represent the market, but may not remain in force any length of time should Hides continue to advance.

### Leather Belting.

|                                            |                          |
|--------------------------------------------|--------------------------|
| Extra heavy, short lap.....                | 60 to 60 and 5 %         |
| Regular, short lap.....                    | 60 and 10 to 60 and 10 % |
| Standard .....                             | 70 to 70 and 5 %         |
| Light standard.....                        | 70 and 10 %              |
| Cut Leather Lacing.....                    | 60 and 10 %              |
| Leather Lacing sides, per square foot..... | 18c.                     |

**Wire Nails.**—The movement of Wire Nails is about in the usual proportion for the season. Buyers, as a rule, require prompt delivery of their purchases, indicating that they are carrying light stocks. Sales are being made in New York of small lots from store at \$2.25 and \$2.30 per keg. Prices are well maintained.

**Cut Nails.**—A fair demand is reported for Cut Nails. In some sections where Iron Cut Nails are in demand buyers are willing to pay a premium for them, owing to the scarcity. Small lots from store, New York, are quoted at \$2.30 per keg.

**White Lead.**—While the use of White Lead in Oil is limited at this time of the year, there is a fair demand. The coming season is looked forward to with anticipation of good business in this field. Prices are unchanged, small lots from store, New York, being quoted at 6¼c. to 6½c. per lb.

**Linseed Oil.**—The demand for Linseed Oil has been confined to small lots. On August 19 prices were re-

duced 7c. per gallon on Oil, the price of new Flaxseed having dropped sharply. A further reduction in price is not unexpected, but may not materialize until the first part of September. City Raw in small lots is quoted at 61c. to 61½c. per gallon, Boiled Oil being 2c. per gallon advance on Raw.

**Spirits Turpentine.**—The price of Turpentine has dropped off ½c. during the week. This reduction brought large consumers and canners into the market early this week, and reduced the local supply considerably. The demand is now moderate, the retail prices being 47c. to 47½c. per gallon.

## TRADE NOTES.

**THE SEAVEY MFG. COMPANY**, 120-122 North street, Boston, Mass., manufacturers of Metal Ware, announce to the trade that they have concluded to discontinue their Boston store at the above address, but will continue the business at their factory in Cambridge, Mass. The announcement states that they have on hand a large and varied assortment of goods which they will offer at prices to attract buyers on quick sales for cash.

**FRANK WRIGHT** of Cavespring, Ga., has erected a building, and is installing machinery for the manufacture of a patented Woven Wire Fly Escape Screen of his invention.

**THE SPRAY WASHING MACHINE & MFG. COMPANY** of Baltimore, Md., have been incorporated with a capital stock of \$50,000, to deal in Washing Machines, Household Articles and Novelties. The incorporators are Henry S. Sohl, Walter H. Waddell, William W. Radcliffe, Gideon P. Hopkins and Henry S. Abenschein.

**SILVER & Co.** of Brooklyn, N. Y., manufacturers of Household Novelties, recently suffered a loss of a considerable amount of stock as a result of a fire in their New York City agency, at 18 Warren street.

**THE JOSEPH DIXON CRUCIBLE COMPANY**, Jersey City, N. J., are sending to the trade pictures of an 18-story steel frame structure ready for the wall casing, calling attention to the fact that Dixon Silica Graphite Paint was selected to protect this work from corrosion. A pamphlet explaining the economy of protective painting will be supplied by the concern to those who desire a copy.

**THE AMERICAN BLOWER COMPANY** of Detroit, Mich., and 141 Broadway, New York, are sending out their sectional catalogue, 141, devoted to the A. B. C. Pressure and Volume Blowers. These Blowers are made in a variety of sizes and styles with steel and cast iron housings. Blast Gates, Countershafts, Pulleys and the various devices required for their insulation are also shown. The last pages of the catalogue are devoted to tables of useful information to those who install fan and blower systems for exhaust or pressure work.

**THE LAURENTIAN ASBESTOS & MICA COMPANY** have been incorporated under the laws of New Jersey, with a capital stock of \$300,000, to manufacture Asbestos and Mica. The incorporators are John L. White, Francis McFarlen and Charles Hardenberg, all of Jersey City, N. J.

**THE PORTLAND ANTIMONY COMPANY** of Portland, Me., have been incorporated with a capital of \$200,000. The officers are C. H. Barker, president, and G. H. Blake, treasurer, both of Portland.

**THE CONSUMERS CAN COMPANY**, Baltimore, Md., are sending through the mails a large size folder printed on manila paper, containing cuts and descriptions of some of their specialties in Tinware and Tinnery's Trimmings. These include Covered Buckets, Pieced Tin Cups, Wax Top Cans, Surprise Egg Whips, Flour Sifters, Ever-Ready Knobs, Kettle Covers, Lamp Brackets, Scoops and a variety of materials for can makers use.

**THE GRASSELLI CHEMICAL COMPANY**, Cleveland, Ohio, have adopted the plan of sending out large size postal cards of striking designs and coloring, calling the attention of the trade to their Eureka Soldering Flux. The patterns are oriental in character and cannot fail to excite the interest of the recipient, who will inevitably read the letter press placed beneath the cut and become impressed with the fact that the Eureka Soldering Flux is worthy of his attention.



THE NATIONAL-FULTON BRASS MFG. COMPANY, Detroit, Mich., recently incorporated with a capital stock of \$400,000, are a reorganization of the Fulton Iron & Engine Works, manufacturers of Monarch Bronze in Ingots, Bronze and Brass Castings, Journal Bearings, Babbitt Metals, &c. The new company, besides largely increasing the capacity of the present plant, will erect new works at St. Louis, plans for which are under way. The officers are George H. Russell, president; M. T. Conklin, first vice-president; J. F. Harrigan, second vice-president; and F. E. Beal, secretary.

THE MANHATTAN BRASS COMPANY, New York, have issued their Catalogue No. 21, illustrating Lamp Burners, Lamps, Candlesticks and Candelabra, Chafing Dishes, Incandescent Gas Burners, Gasoline Fixtures, Cuspidors, Bicycle Lamps, &c.

JOHN MAXWELL'S SONS, 259 Pearl street, New York, are distributing an illustrated catalogue of their patented Bird Cages. The guards of these Cages are made of fine brass wire, by raising which the perches can be taken out and the bathtubs set in the cage.

THE GEORGE WORTHINGTON COMPANY of Cleveland, Ohio, have issued a catalogue showing their Electric Goods, including Telegraph and Telephone Supplies, Lamps, Fixture Supplies, Motors, Electric Fans, &c.

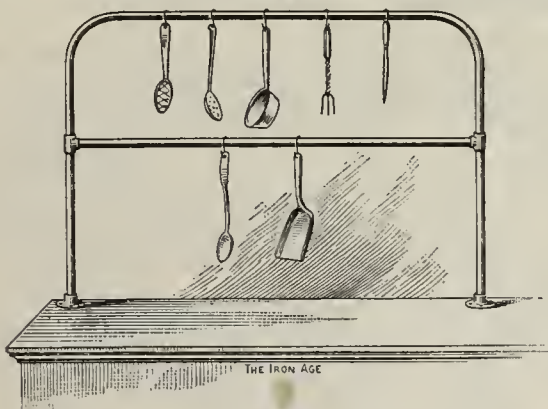
THE SOUTHWESTERN SLATE MFG. COMPANY of Slatington, Ark., have filed articles of incorporation increasing their capital stock to \$10,000,000. The company are developing Slate quarries at Slatington and will build a railroad from there to Hot Springs, Ark., 56 miles distant.

J. A. HARPS of Ackermanville, Pa., who purchased the patent rights, stock, tools, &c., of the Never-Fail Oil & Gasoline Can Company at Greenfield, Ohio, a few months ago, reports that since beginning operations the output has been trebled, and he is now not able to keep up with the increasing demand for the Cans which are being shipped to all parts of the country. An inquiry for a large number of the Cans has also been received from London, England. Mr. Harps has associated with himself in the manufacture of these Cans, Eugene Arnott and his brother, J. S. Arnott, the former being the inventor of the Can, and has formed the J. A. Harps Mfg. Company of Greenfield.

This is the season when the prudent dealer will lay in his stock of Coal Hods. It is already reported that the run on these goods is so heavy that in some cases manufacturers have been unable to meet the pressing requirements of their customers. In this connection it will be well to take notice of the announcement of Sidney Shepard & Co., Buffalo, N. Y., to the effect that they are able to meet all orders for Coal Hods promptly.

### A Pipe Rack for Displaying Kitchen Utensils.

In the accompanying illustration is shown a rack made of 1-inch water pipe that is placed on the back of a counter in the store of Stark Bros., Stamford, Conn.



A Pipe Rack for Displaying Kitchen Utensils.

From this are hung small kitchen and household utensils by means of copper wire bent with a hook at each end. This rack serves as a convenient way of bringing to the attention of customers a line of small articles that are frequently lost sight of in the store.

QUISH & PRATT are successors to Quish & Olsaver in the Stove, Tinware, Hardware, Farming Implement and Sporting Goods business in Dexter, Mich.

## Stove and Hardware Dealers.

REED & EDGERTON have purchased the Stove, Hardware, Farming Implement and furniture business of W. C. Sutton at St. Edwards, Neb.

HANSEN BROS. and J. C. Petheram have consolidated their stores in Kanawha, Iowa, under the style of the Petheram, Hansen Company. The stock carried embraces Stoves, Tinware, Shelf and Heavy Hardware and Sporting Goods.

J. P. STAGG is successor to Stagg & Conrad in the Stove, Hardware and Sporting Goods business in Anaconda, Mont.

STRINGFELLOW & TANNEHILL, dealers in Stoves, Shelf and Heavy Hardware, Agricultural Implements, Sporting Goods, &c., Roswell, N. M., were burned out in the large fire in that place several weeks since. Their loss above insurance was about \$2000. The firm promptly bought a new stock to replace that destroyed and are again in a position to fill the orders of their customers.

GELSER & GILCHRIST, in the Stove, Hardware and Farm Implement business in Vinton, Iowa, have been succeeded by Gilchrist & Smeltzer.

WILMOT CASTLE & Co., Rochester, N. Y., are calling attention to the special inducements for stove dealers to handle their New Era Stove Pipe Radiator. This device can be presented with special effect now that the effect of the coal strike is brought home to every one.

### CONTENTS.

| Editorials—                                                  | PAGE. |
|--------------------------------------------------------------|-------|
| Workmen's Organizations and Discipline in Hazardous Trades.  | 39    |
| Trade Protection.                                            | 39    |
| Manufacturers and the Export Trade.                          | 39    |
| The Demand for Bright Young Men.                             | 40    |
| Phase of Western Building Situation.                         | 40    |
| The Pig Iron Situation.                                      | 41    |
| Nominations for Stove Captains.                              | 42    |
| Stoves, Fuel and Captains.                                   | 42    |
| The Peninsular Slack Burners. Illustrated.                   | 42    |
| Charter Oak Stoves and Ranges.                               | 43    |
| The Ideal Warm Air Register. Illustrated.                    | 43    |
| Eastern Householders and Soft Coal.                          | 44    |
| Superior Stoves and Heaters.                                 | 44    |
| Odd Plates.                                                  | 44    |
| A Retail Hardware Consolidation.                             | 45    |
| Michigan Retail Hardware Dealers' Association.               | 46    |
| Boston Master Plumbers.                                      | 47    |
| Thomas Devlin & Co.                                          | 47    |
| The 20 Series Standard Boilers. Illustrated.                 | 47    |
| The Drake Series C Acetylene Generators. Illustrated.        | 48    |
| Brown & Wales' Plumbing Goods.                               | 49    |
| Will It Increase the Sale of Heating Apparatus?              | 49    |
| Equation of Pipes.                                           | 49    |
| Piping Materials for Steam Plants.                           | 50    |
| Canadian Master Plumbers.                                    | 51    |
| Canadian Sanitary Committee Report.                          | 51    |
| The Plumbing and Steam Supply Bowling League.                | 51    |
| Fuel Oil apparatus.                                          | 52    |
| A Large Plumbing Contract.                                   | 52    |
| New York City Notes.                                         | 52    |
| Heating and Plumbing Notes.                                  | 53    |
| New Firms and Changes.                                       | 54    |
| A Pipe Rack for Displaying Kitchen Utensils. Illustrated.    | 54    |
| Whipple Gives Children an Outing.                            | 54    |
| The Tin Plate Situation.                                     | 55    |
| The Sykes Steel Window. Illustrated.                         | 55    |
| Pattern for Ventilator Breast. Illustrated.                  | 56    |
| The Quality of Galvanized Sheets.                            | 57    |
| Perfected Granite Roofing.                                   | 57    |
| A Humanitarian Suggestion.                                   | 57    |
| Flashings.                                                   | 57    |
| The Taylor Quick Adjusting Self Locking Clamps. Illustrated. | 58    |
| The Letter Box.                                              |       |
| Who Makes Fuel Oil Burners?                                  | 59    |
| A Roof Around a Tree.                                        | 59    |
| Bursting Seams in Gutter.                                    | 59    |
| Wants Repairs for Tobacco Gasoline Furnace.                  | 59    |
| Individual Versus Central Station Heating Systems.           | 59    |
| A Question for Plumbers. Illustrated.                        | 59    |
| Pattern for an Oblique Funnel Bottom.                        | 59    |
| Trade Report.                                                |       |
| Market Summary.                                              | 60    |
| Metal Market.                                                | 60    |
| The Pig Iron Market.                                         | 61    |
| Chicago Report.                                              | 61    |
| The Hardware Trade.                                          | 62    |
| Notes on Prices.                                             | 62    |
| Trade Notes.                                                 | 62    |
| Three-Way Valves. Illustrated.                               | 63    |
| Stove and Hardware Dealers.                                  | 63    |
| Metal and Miscellaneous Prices.                              | 64    |
| Labor Exchange—                                              |       |
| Help and Situations Wanted.                                  | 68    |



# ROOFING SUPPLIES, METALS, TIN PLATES, &c.

REVISED AUGUST 21, 1902.

| Aluminum—                                                           |        |        |        |
|---------------------------------------------------------------------|--------|--------|--------|
| No. 1 Aluminum (guaranteed over 99% Pure), in ingots for remelting. |        |        |        |
| Small lots.                                                         | 37¢    |        |        |
| 100-lb lots.                                                        | 35¢    |        |        |
| Aluminum Sheet, B. & S. gauge.                                      |        |        |        |
| In lots of 50 lbs or more.                                          |        |        |        |
| Wider than.....                                                     | 6-in   | 14-in  | 24-in  |
| And including.....                                                  | 14-in  | 24-in  | 30-in  |
| Nos. 13 to 19.....                                                  | \$0.42 | \$0.44 | \$0.47 |
| " 20.....                                                           | .44    | .46    | .49    |
| " 21 to 23.....                                                     | .46    | .48    | .51    |
| " 24.....                                                           | .48    | .50    | .53    |
| " 25.....                                                           | .47    | .51    | .54    |
| " 26.....                                                           | .47    | .51    | .59    |
| " 27.....                                                           | .48    | .57    | .62    |
| " 28.....                                                           | .48    | .57    | .64    |
| " 29.....                                                           | .49    | .60    | .69    |
| " 30.....                                                           | .50    | .64    | .77    |
| Note.—Lots of less than 50 lbs 5¢ extra.                            |        |        |        |

| Antimony—      |                |
|----------------|----------------|
| Cookson.....   | 10 @ 10 1/2¢   |
| Hallett's..... | 8 3/4 @ 8 5/8¢ |
| U.S.....       | 8 1/4 @ 8 1/8¢ |

Brass, Roll and Sheet..... 30%

## Conductors—

| Corrugated.                              |              |
|------------------------------------------|--------------|
| Round Square—                            |              |
| Galvanized 1/2 or more, N'st'd.....      | 75%          |
| " Not Nested.....                        | 70 & 12 1/2¢ |
| " Plain Round, 1/2 or more.....          | 75%          |
| Nested.....                              | 75%          |
| Galvanized, Plain Round, Not Nested..... | 70 & 12 1/2¢ |

## Spiral Lock Seam Pipe—

|                 |               |
|-----------------|---------------|
| Galvanized..... | 60 @ 60 & 10% |
|-----------------|---------------|

## Spiral Riveted.

|                 |     |
|-----------------|-----|
| Galvanized..... | 40% |
|-----------------|-----|

See also Elbows and Shoes; Eave Trough Miters; Strainers, Conductor.

## Conductor Strainers—

See Strainers, Conductor

## Copper—

|                 |                  |
|-----------------|------------------|
| Lake Ingot..... | 12 1/2 @ 12 3/4¢ |
|-----------------|------------------|

|              |                  |
|--------------|------------------|
| Casting..... | 12 1/4 @ 12 3/8¢ |
|--------------|------------------|

|                     |                     |
|---------------------|---------------------|
| Sheet and Bolt..... | 18¢ @ 18 1/2¢ basis |
|---------------------|---------------------|

|                         |                     |
|-------------------------|---------------------|
| Cold Rolled Sheets..... | 11¢ @ 11 1/2¢ basis |
|-------------------------|---------------------|

|                                      |           |
|--------------------------------------|-----------|
| Cold Rolled and Polished Sheets..... | 20¢ basis |
|--------------------------------------|-----------|

|                     |           |
|---------------------|-----------|
| Planned Sheets..... | 21¢ basis |
|---------------------|-----------|

|                              |           |
|------------------------------|-----------|
| Bottoms, Pits and Flats..... | 22¢ basis |
|------------------------------|-----------|

## Eave Trough Galvanized

|                |          |
|----------------|----------|
| Territory..... | L. C. L. |
|----------------|----------|

|              |     |
|--------------|-----|
| Eastern..... | 80% |
|--------------|-----|

|              |              |
|--------------|--------------|
| Central..... | 75 & 17 1/2¢ |
|--------------|--------------|

|               |              |
|---------------|--------------|
| Southern..... | 75 & 17 1/2¢ |
|---------------|--------------|

|                 |          |
|-----------------|----------|
| S. Western..... | 75 & 15% |
|-----------------|----------|

Terms, 2% for cash.

## Eave Trough Mitres—

|                        |           |
|------------------------|-----------|
| Lap or Slip Joint..... | list, 25% |
|------------------------|-----------|

## Elbows—Plain Adjustable—

|                   |  |
|-------------------|--|
| Eastern List..... |  |
|-------------------|--|

|          |     |
|----------|-----|
| Tin..... | 30% |
|----------|-----|

|                 |     |
|-----------------|-----|
| Galvanized..... | 30% |
|-----------------|-----|

|                     |     |
|---------------------|-----|
| Perfect Elbows..... | 40% |
|---------------------|-----|

## Stove Pipe—

|                 |  |
|-----------------|--|
| Four-Piece..... |  |
|-----------------|--|

|            |                       |
|------------|-----------------------|
| No. 1..... | 4 1/2 5 5 1/2 6-inch. |
|------------|-----------------------|

|            |                     |
|------------|---------------------|
| No. 2..... | .65 .70 .75 .80 .85 |
|------------|---------------------|

|            |                     |
|------------|---------------------|
| No. 3..... | .60 .63 .65 .70 .80 |
|------------|---------------------|

## Elbows and Shoes—

|                 |     |
|-----------------|-----|
| Galvanized..... | 60% |
|-----------------|-----|

## Casoline—

See Petroleum Products.

## Iron, Sheet—Black.

| One Pass, C. R. |  |
|-----------------|--|
|-----------------|--|

| Soft Steel. |  |
|-------------|--|
|-------------|--|

|                    |      |
|--------------------|------|
| Nos. 14 to 16..... | 3.25 |
|--------------------|------|

|                    |      |
|--------------------|------|
| Nos. 18 to 21..... | 3.35 |
|--------------------|------|

|                    |      |
|--------------------|------|
| Nos. 22 to 24..... | 3.45 |
|--------------------|------|

|                     |      |
|---------------------|------|
| Nos. 25 and 26..... | 3.55 |
|---------------------|------|

|             |      |
|-------------|------|
| No. 27..... | 3.65 |
|-------------|------|

|             |      |
|-------------|------|
| No. 28..... | 3.75 |
|-------------|------|

Russia, Planished, &c.

Genuine Russia, accord.

Ing to assortment..... 11 @ 11 1/2¢

Do, Stained..... 10 @ 10 1/2¢

Patent Planished, 11 @ 11 1/2¢; B, 10¢ net

## Galvanized.

|                     |              |
|---------------------|--------------|
| Nos. 14 and 16..... | 3.40 @ 3.45¢ |
|---------------------|--------------|

|                     |              |
|---------------------|--------------|
| Nos. 18 and 20..... | 3.65 @ 3.75¢ |
|---------------------|--------------|

|                     |              |
|---------------------|--------------|
| Nos. 22 and 24..... | 3.95 @ 4.05¢ |
|---------------------|--------------|

|             |              |
|-------------|--------------|
| No. 26..... | 4.20 @ 4.35¢ |
|-------------|--------------|

|             |              |
|-------------|--------------|
| No. 27..... | 4.50 @ 4.65¢ |
|-------------|--------------|

|             |              |
|-------------|--------------|
| No. 28..... | 4.80 @ 4.95¢ |
|-------------|--------------|

|             |              |
|-------------|--------------|
| No. 30..... | 5.95 @ 6.15¢ |
|-------------|--------------|

No. 20 and lighter, 36 inches wide, 25¢ higher.

## Lead—

|                   |               |
|-------------------|---------------|
| American Pig..... | 4.45 @ 4 1/2¢ |
|-------------------|---------------|

|          |            |
|----------|------------|
| Bar..... | 5 @ 5 1/2¢ |
|----------|------------|

|           |                 |
|-----------|-----------------|
| Pipe..... | 6 1/2¢ @ 6 3/4¢ |
|-----------|-----------------|

|                     |                   |
|---------------------|-------------------|
| Tin Lined Pipe..... | 12 1/2¢ @ 20% off |
|---------------------|-------------------|

|                 |                  |
|-----------------|------------------|
| Sheet Lead..... | 7 1/2¢ @ 20% off |
|-----------------|------------------|

Old Lead in exchange, 3 1/2¢ @ 3¢.

## Mitres Eave Trough—

See Eave Trough Miters.

## Nickel—

|             |          |
|-------------|----------|
| Per lb..... | 55 @ 60¢ |
|-------------|----------|

## Paints, Oils &c.—

### Leads—

|                                   |               |
|-----------------------------------|---------------|
| Lead, American White, in Oil..... | 6 1/2 @ 6 3/4 |
|-----------------------------------|---------------|

|                            |               |
|----------------------------|---------------|
| Lots less than 500 lb..... | 6 1/2 @ 6 3/4 |
|----------------------------|---------------|

|                                     |       |
|-------------------------------------|-------|
| Lead, White, in oil, 25 lb tin..... | 1 1/2 |
|-------------------------------------|-------|

|                                         |       |
|-----------------------------------------|-------|
| Lead, white, in oil, 12 1/2 lb tin..... | 1 1/2 |
|-----------------------------------------|-------|

|                                     |       |
|-------------------------------------|-------|
| Lead, white, in oil, 1 to 5 lb..... | 1 1/2 |
|-------------------------------------|-------|

|                               |           |
|-------------------------------|-----------|
| Lead, white, dry in bbls..... | 5 1/2 @ 6 |
|-------------------------------|-----------|

|                                          |   |
|------------------------------------------|---|
| Lead, Red, bbls, 1/2 bbls, and kegs..... | 6 |
|------------------------------------------|---|

|                          |   |
|--------------------------|---|
| Lots 500 lb or over..... | 6 |
|--------------------------|---|

|                            |       |
|----------------------------|-------|
| Lots less than 500 lb..... | 6 1/2 |
|----------------------------|-------|

### Oils—

|                         |              |
|-------------------------|--------------|
| Linseed, City, raw..... | 61 @ 61 1/2¢ |
|-------------------------|--------------|

|                            |              |
|----------------------------|--------------|
| Linseed, City, boiled..... | 61 @ 61 1/2¢ |
|----------------------------|--------------|

|                                    |              |
|------------------------------------|--------------|
| Linseed State and West'n, raw..... | 60 @ 60 1/2¢ |
|------------------------------------|--------------|

### Spirits Turpentine—

|                       |              |
|-----------------------|--------------|
| In Southern bbls..... | 47 @ 47 1/2¢ |
|-----------------------|--------------|

|                      |             |
|----------------------|-------------|
| In machine bbls..... | 47 1/2 @ 49 |
|----------------------|-------------|

### Putty—

|              |        |
|--------------|--------|
| In bulk..... | \$2.25 |
|--------------|--------|

|                  |      |
|------------------|------|
| In bladders..... | 2.25 |
|------------------|------|

|                             |      |
|-----------------------------|------|
| In cans 12 lb to 25 lb..... | 2.25 |
|-----------------------------|------|

|                           |      |
|---------------------------|------|
| In cans 1 lb to 5 lb..... | 3.25 |
|---------------------------|------|

### Petroleum Products—

In Barrels (Barrel included)

|                     |                  |
|---------------------|------------------|
| Stove Gasoline..... | 10 1/2 @ 11 1/2¢ |
|---------------------|------------------|

|               |          |
|---------------|----------|
| Kerosene..... | 12 @ 13¢ |
|---------------|----------|

### Pipe, Block Tin—

|             |     |
|-------------|-----|
| Per lb..... | 37¢ |
|-------------|-----|

### Pipe Drain.....

|       |     |
|-------|-----|
| ..... | 40% |
|-------|-----|

### Pipe, Spiral—

See Conductors.

## Registers—

List Sept. 2, 1901.

|                    |     |
|--------------------|-----|
| Back Japanese..... | 70% |
|--------------------|-----|

|                     |     |
|---------------------|-----|
| White Japanese..... | 70% |
|---------------------|-----|

|                    |     |
|--------------------|-----|
| Nickel Plated..... | 70% |
|--------------------|-----|

|                                           |     |
|-------------------------------------------|-----|
| Bronze Finishes in Imitation of Gold..... | 70% |
|-------------------------------------------|-----|

|                               |     |
|-------------------------------|-----|
| Silver, Copper or Bronze..... | 70% |
|-------------------------------|-----|

|                                        |     |
|----------------------------------------|-----|
| Electroplated in Brass, Bronze or..... | 70% |
|----------------------------------------|-----|

|             |     |
|-------------|-----|
| Copper..... | 70% |
|-------------|-----|

|                      |     |
|----------------------|-----|
| White Porcelain..... | 60% |
|----------------------|-----|

|                                   |     |
|-----------------------------------|-----|
| Solid Brass and Bronze Metal..... | 50% |
|-----------------------------------|-----|

## Roofing Material—

|                                  |                 |
|----------------------------------|-----------------|
| 1 Ply Tarred Paper, 1/2 ton..... | \$31.00 @ 32.00 |
|----------------------------------|-----------------|

|                         |                      |
|-------------------------|----------------------|
| 2 Ply Tarred Paper..... | 108 sq. ft. 55 @ 60¢ |
|-------------------------|----------------------|

|                         |                      |
|-------------------------|----------------------|
| 3 Ply Tarred Paper..... | 108 sq. ft. 80 @ 85¢ |
|-------------------------|----------------------|

|                    |                        |
|--------------------|------------------------|
| Slater's Felt..... | 1 ton, \$35.00 @ 36.00 |
|--------------------|------------------------|

|                    |             |
|--------------------|-------------|
| Roofing Pitch..... | bbl. \$2.50 |
|--------------------|-------------|

## Rosin—

Common and Good—Strainer.

|                    |                      |
|--------------------|----------------------|
| Rosin, C. & D..... | bbl. \$1.50 @ \$1.60 |
|--------------------|----------------------|

|                    |                      |
|--------------------|----------------------|
| Rosin, E. & F..... | bbl. 1.45 @ 1.7 1/2¢ |
|--------------------|----------------------|

|                    |                  |
|--------------------|------------------|
| Rosin, G. & H..... | bbl. 1.75 @ 1.90 |
|--------------------|------------------|

|                    |                  |
|--------------------|------------------|
| Rosin, I. & K..... | bbl. 2.35 @ 3.00 |
|--------------------|------------------|

|                    |                  |
|--------------------|------------------|
| Rosin, M. & N..... | bbl. 3.35 @ 3.70 |
|--------------------|------------------|

## Shoes and Elbows—

See Elbows and Shoes.

## Slate Roofing—

L. o. b. oars, Quarry Station.

According to size.

|               |  |
|---------------|--|
| Pennsylvania: |  |
|---------------|--|

|                           |                 |
|---------------------------|-----------------|
| Best Bangor, 1/2 sqr..... | \$3.75 @ \$8.00 |
|---------------------------|-----------------|

|                            |             |
|----------------------------|-------------|
| No. 1 Bangor, 1/2 sqr..... | 3.50 @ 3.75 |
|----------------------------|-------------|

|                          |             |
|--------------------------|-------------|
| Pen Argyle, 1/2 sqr..... | 3.50 @ 4.50 |
|--------------------------|-------------|

|                            |             |
|----------------------------|-------------|
| Peach Bottom, 1/2 sqr..... | 5.25 @ 6.35 |
|----------------------------|-------------|

|                             |             |
|-----------------------------|-------------|
| No. 1 Chapman, 1/2 sqr..... | 3.75 @ 4.75 |
|-----------------------------|-------------|

|                                  |             |
|----------------------------------|-------------|
| No. 1 Penna. Black, 1/2 sqr..... | 3.15 @ 4.15 |
|----------------------------------|-------------|

|                               |             |
|-------------------------------|-------------|
| Unfading Washington Ban-..... | 3.00 @ 4.50 |
|-------------------------------|-------------|

|                   |             |
|-------------------|-------------|
| gor, 1/2 sqr..... | 3.00 @ 4.50 |
|-------------------|-------------|

## Vermont:

|                               |                 |
|-------------------------------|-----------------|
| No. 1 Sea Green, 1/2 sqr..... | \$2.25 @ \$3.50 |
|-------------------------------|-----------------|

|                      |             |
|----------------------|-------------|
| Purple, 1/2 sqr..... | 4.50 @ 5.00 |
|----------------------|-------------|

|                              |             |
|------------------------------|-------------|
| Unfading Green, 1/2 sqr..... | 4.25 @ 5.25 |
|------------------------------|-------------|

|                   |              |
|-------------------|--------------|
| Red, 1/2 sqr..... | 7.00 @ 11.00 |
|-------------------|--------------|

## Maine:

|                                 |  |
|---------------------------------|--|
| Brownville, Unfading Black..... |  |
|---------------------------------|--|

|                     |               |
|---------------------|---------------|
| No. 1, 1/2 sqr..... | \$5.25 @ 7.50 |
|---------------------|---------------|

## Solder—

|                        |                  |
|------------------------|------------------|
| 1/2 lb guaranteed..... | 10 1/4 @ 10 3/4¢ |
|------------------------|------------------|

|            |                |
|------------|----------------|
| No. 1..... | 1 1/4 @ 1 1/2¢ |
|------------|----------------|

Prices of Solder indicated by private brands vary according to composition.

## Soldering Fluids—

Per Pound.

| Barrels Q'tities |  |
|------------------|--|
|------------------|--|

|                        |       |
|------------------------|-------|
| Concentrated Flux..... | 4c 5c |
|------------------------|-------|

|                  |           |
|------------------|-----------|
| Eureka Flux..... | 3c 3 1/2c |
|------------------|-----------|

|                      |           |
|----------------------|-----------|
| Triple Strength..... | 4 1/2c 5c |
|----------------------|-----------|

|                         |    |
|-------------------------|----|
| Extra Concentrated..... | 7c |
|-------------------------|----|

|              |    |
|--------------|----|
| Crystal..... | 2c |
|--------------|----|

|                     |    |
|---------------------|----|
| Gedney's Fluid..... | 2c |
|---------------------|----|

|                   |       |
|-------------------|-------|
| Lennox Fluid..... | 2c 3c |
|-------------------|-------|

|                      |           |
|----------------------|-----------|
| Perfection Flux..... | 3c 3 1/2c |
|----------------------|-----------|

|                                   |           |
|-----------------------------------|-----------|
| Yager's Salts, 1 lb. bottles..... | each, 50¢ |
|-----------------------------------|-----------|

|                             |  |
|-----------------------------|--|
| 1 lb. bottles, per lb., 45¢ |  |
|-----------------------------|--|

## Soldering Coppers—

|             |          |
|-------------|----------|
| Per lb..... | 22 @ 24¢ |
|-------------|----------|

## Spelter—

|                      |            |
|----------------------|------------|
| Western Spelter..... | 6 @ 6 1/2¢ |
|----------------------|------------|

## Spiral Pipe—

See Conductors.

## Stove Pipe Elbows—

See Elbows, Stove Pipe.

## Stove Trucks—

See Trucks, Stove.

## Strainers, Conductor—

|                 |     |
|-----------------|-----|
| Galvanized..... | 50% |
|-----------------|-----|



## ALPHABETICAL LIST OF ADVERTISERS.

|                                               |                                               |                                                        |                                                   |                                                  |
|-----------------------------------------------|-----------------------------------------------|--------------------------------------------------------|---------------------------------------------------|--------------------------------------------------|
| Adam, W. J..... 36                            | Cole Mfg. Co..... 25                          | Gray, G. L..... 70                                     | Milwaukee Pattern Works... 34                     | Sheppard, Isaac A. & Co..... 1                   |
| Adee, Fred. & Co..... 37                      | Colebrook, W. H. Sons & Co.. 30               | Gummev, McFarland & Co... 75                           | Miner & Peck Mfg. Co ..... 34                     | Shields, W. H. & Co..... 33                      |
| Adler, H. Co..... 10                          | Cotwell Lead Co..... 36                       | Gunnster & Forsyth..... 36                             | Monash-Younger Co..... 34                         | Smith, H. B. Co..... 12                          |
| American Blower Co..... 23                    | Cooney & Geizer..... 72                       | Gurney Heater Mfg. Co..... 21                          | Moncrief F'ce & Fdry. Co.... 26                   | Smith & Anthony Co..... 84                       |
| American Furnace Co..... 16                   | Cope, Geo. W..... 31                          | Hanson & Van Winkle Co.... 34                          | Montross Metal Shingle Co... 77                   | Smith & Thayer Co..... 20                        |
| American Galvanizing Wks.. 73                 | Cortright Metal Roofing Co.. 77               | Harrington & King Perfo-<br>rating Co..... 65          | Morgan & Co..... 37                               | Somerset Stove Fdry. Co.... 26                   |
| American Radiator Co..... 19                  | Cory, Uzal & Co..... 29                       | Hart & Cooley Co..... 29                               | Mott, J. L. Iron Works..... 23                    | Sommer's, John Son..... 1                        |
| American Sheet Steel Co.. 1&76                | Cosby, C. H..... 26                           | Hart & Crouse Co..... 18                               | Mueller, L. J. F'ce Co.. .... 21                  | Special Notices..... 69                          |
| American Steam Gage &<br>Valve Mfg. Co..... 1 | Crosby Steam Gage & Valve<br>Co..... 1        | Heath, C. C. & Co..... 31                              | Mullins, W. H..... 80                             | Sperry, D. R. & Co..... 70                       |
| American Steel Roofing Co.. 74                | Curtis & Curtis Co..... 36                    | Helios-Upton Co..... 27                                | Munsell, E. & Co..... 31                          | Stamford Foundry Co ..... 17                     |
| American Tin Plate Co..... 76                 | Dangler Stove & Mfg. Co.... 8                 | Hessler, H. E. Co..... 33                              | National Enameling & Stamp-<br>ing Co..... 38     | Standard Lighting Co..... 9                      |
| Anderson Coupling Co..... 36                  | Danzer Metal Works ..... 81                   | Hoffman, Geo. W..... 31                                | National Pipe Bending Co... 9                     | Steel & Iron Aluminum Coat-<br>ing Co..... 75    |
| Art Modeling Works..... 74                    | Day Metallic Mfg. Co..... 37                  | Howes, S. M. Co..... 10&31                             | New York Iron Roofing &<br>Corrugating Co..... 73 | Stiles & Parker Press Co.... 82                  |
| Asphalt Ready Roofing Co.. 77                 | Dietz, R. E. Co..... 71                       | Howson & Howson ..... 69                               | New York Trade School. .... 69                    | Stocking, E. B..... 69                           |
| Auld & Conger Co..... 73                      | Dighton Furnace Co..... 22                    | Hubbell, Harvey..... 37                                | Niagara Machine & Tool Wks 81                     | Stoltz, Frank D..... 23                          |
| Ayling Bros..... 31                           | Dixon, Jos. Crucible Co..... 74               | Independent Register Co.... 27                         | Noppel Pump Co..... 37                            | Stover Mfg. Co..... 30                           |
| Baker, L. B. Mfg. Co..... 26                  | Double Truss Cornice Brake<br>Co..... 80      | International Correspond-<br>ence Schools..... 69      | Nye, A. T. & Son Co..... 11                       | Stowell Mfg. Co..... 80                          |
| Barstow Stove Co..... 84                      | Drake, W. H..... 26                           | International Heater Co.... 3                          | O'Halloran & Jacobs..... 73                       | Swaine, F. J. Co..... 82                         |
| Beckwith, P. D., Est. of..... 2               | Drake & Mills..... 71                         | Janney, Steinmetz & Co.... 74                          | Ohio Mica Co..... 31                              | Swett, A. L. Iron Works.... 23                   |
| Berger Bros. Co..... 74                       | Dreis, Andrews & Krump.... 81                 | Jenkins Bros..... 1                                    | Ohio Stove Co..... 7                              | Taylor & Boggis Fdry. Co... 10                   |
| Berger Mfg. Co..... 17                        | Drouve, G. Co..... 81                         | Johnson, E. J. & Co..... 73                            | Ohl, Geo. A. & Co..... 82                         | Taylor Co., N. & G..... 84                       |
| Bergstrom Bros. & Co..... 18                  | Edwards, J. H..... 34                         | Joliet Stove Works..... 6                              | Oshorn, J. M. & L. A ..... 79                     | Toledo Mch. & Tool Co..... 80                    |
| Bertsch & Co..... 82                          | Edwards Mfg. Co..... 79                       | Keene, Geo. C. & Co..... 83                            | Ostrander, W. R. & Co..... 71                     | Trane, Jas. A. Vacuum Heat-<br>ing Co..... 37    |
| Bickelhaupt, G. Skylight Wks 77               | Ellers, J. H. & Co..... 79                    | Kelsey Heating Co..... 38                              | Patric Furnace Co..... 21                         | Triumph Adjustable Stove<br>Pipe Mfg. Co..... 30 |
| Bills, E. W. Co..... 82                       | Energy Elevator Co..... 72                    | Kemp, C. M. Mfg. Co..... 36                            | Peck, Stow & Wilcox Co.... 81                     | Troy Nickel Works ..... 32                       |
| Blodgett, G. S. Co..... 23                    | Evans Stamping & Plating Co 20                | Kewanee Boiler Co..... 16                              | Peck-Williamson Co..... 15                        | Tubular Heating & Venti-<br>lating Co..... 27    |
| Bonnot Co..... 29                             | Excelsior Steel Furnace Co.. 28               | Kieley & Mueller..... 1                                | Pell, John Enameling Wks.. 29                     | Tucker & Dorsey Mfg. Co... 29                    |
| Boynton Furnace Co..... 16                    | Excelsior Tool & Mch. Wks.. 82                | Kilne, J. M..... 34                                    | Penn Metal Ceiling & Roofing<br>Co..... 74        | U. S. Register Co., Ltd..... 9                   |
| Brand Stove Co..... 19                        | Falkenan-Sinclair Mch. Co. 81                 | Koven, L. O. & Bro..... 36                             | Perkins, J. L. & Co..... 72                       | Utica Heater Co..... 20                          |
| Bray, J. & Co..... 73                         | Fanner Mfg. Co..... 70                        | Kramer Bros..... 26                                    | Pierce, Butler & Pierce Mfg.<br>Co..... 23        | Valentine, M. D. & Bro. Co.. 33                  |
| Bridgeport Crucible Co.... 33                 | Fenn, Geo. E..... 72                          | Lalance & Grosjean Mfg. Co. 70                         | Pittsburgh Stove & Range Co 4                     | Vedder Pattern Works..... 31                     |
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| Burgess Soldering Furnace<br>Co..... 37       | Foster, F. W. Mfg. Co..... 36                 | Littleford Bros..... 80                                | Richmond Co..... 13                               | Walworth Mfg. Co..... 1                          |
| Burton, W. J. & Co..... 34                    | Frاند, Martin J. & Co..... 79                 | McClure & Co..... 84                                   | Ringen Stove Co..... 5                            | Washburne, E. G. & Co., 72&83                    |
| Callahan, Geo. & Co..... 37                   | Friedley & Voshardt..... 78                   | McSberry, Chas..... 81                                 | Robinson, J. M. & Co. .... 83                     | Waterbury Brass Co..... 1                        |
| Canton Machine & Mfg. Co.. 83                 | Frink, L. P..... 84                           | Magee Furnace Co..... 1                                | Rochester Radiator Co..... 28                     | Weir Stove Co..... 84                            |
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| Castle, Wilmot & Co..... 29                   | Fulmer, J. H..... 74                          | Marcy Stove Repair Co... 33                            | Salem Nail Co..... 72                             | Wheeler, W. A..... 83                            |
| Chattanooga Steel Roofing<br>Co..... 81       | Gatesburg Cornice Works... 79                 | Marston, I. G. & Co..... 34                            | Saunders', D. Sons..... 36                        | White, Warner Co..... 26                         |
| Cincinnati Stamping Co.... 77                 | Galt, John & Sons..... 73                     | Matthews, H. A. Mfg. Co.... 28                         | Schneider & Trenkamp Co... 8                      | Willard, Wm. G..... 9                            |
| Clark, Geo. M. & Co..... 24                   | Genuine Bangor Slate Co... 73                 | Merchaut & Co..... 73                                  | Schratwiesers Metal Lath<br>Works..... 72         | Williams Stove Lining Co.. 32                    |
| Clark, Henry N. Co..... 28                    | Gieschel, Henry & Co..... 34                  | Metropolis Sheet Metals &<br>Stove Repairing Co..... 9 | Schwab, R. J. & Sons Co.... 22                    | Wister, L. & R. & Co ..... 84                    |
| Clark Novelty Co..... 72                      | Globe Iron Rfg. & Corrugat-<br>ing Co..... 77 | Meurer Bros. Co..... 75                                | Schwerdtle Stamp Co..... 79                       | Wood, Alan Co..... 77                            |
| Clark, Quien & Morse..... 79                  | Globe Ventilator Co..... 72                   | Meyer, F. & Bro. Co..... 17                            | Shepard, Sidney & Co..... 30                      | Wood & Bishop Co..... 26                         |
| Clason, Arch. Metal Works.. 72                | Gobeille Pattern Co..... 31                   | Millar, Chas. & Son Co..... 84                         |                                                   | Young, Jos. H ..... 36                           |
| Clayton & Lambert Mfg. Co.. 37                | Gordon, W. J..... 83                          | Miller, Wm. Range & Furnace<br>Co..... 7               |                                                   | Zucker & Levett & Loeb Co.. 34                   |
| Coe, Jas. A. & Co..... 77                     | Gorton & Lidgerwood Co. .... 1                |                                                        |                                                   |                                                  |
|                                               | Graff Furnace Co..... 11                      |                                                        |                                                   |                                                  |

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**Robinson, J. M. Mfg. Co., Cincinnati, Ohio.**

**Toledo Mach. & Tool Co., Toledo, O.**

**Rochester Radiator Co., Rochester, N. Y.**

**American Radiator Co., Chicago, Ill.**

**Gurney Heater Mfg. Co., Taunton, Mass.**

**Mott, J. L. Iron Works, 84 Beekman St., New York.**

**Pierce, Butler & Pierce Mfg. Co., Syracuse, N. Y.**

**Koven, L. O. & Bro., 50 Cliff St., N. Y.**

**Frink, I. P., 551 Pearl St., New York.**

**Canton Steel Roofing Co., Canton, O.**

**Dighton Furnace Co., Taunton, Mass.**

**Hart & Cooley Co., New Britain, Conn.**

**Independent Register Co., Cleveland, Ohio.**

**Matthews, H. A. Mfg. Co., Seymour, Ct.**

**U. S. Register Co., Ltd., Battle Creek, Mich.**



**Sheets, Aluminum Coated Steel.**  
Steel & Iron Aluminum Coating Co.,  
Connellsville, Pa.

**Sheets, Galvanized.**  
American Sheet Steel Co., New York.  
Bruce & Cook, 186 to 190 Water St.,  
N. Y.  
McClure & Co., Pittsburgh, Pa.  
Osborn, J. M. & L. A., Cleveland, O.  
Wood Alan Co., Philadelphia, Pa.

**Sheets, Iron and Steel.**  
American Sheet Steel Co., New York.  
Bruce & Cook, 186 to 190 Water St.,  
N. Y.  
Coe, Jas. A. & Co., Newark, N. J.  
Follansbee Bros. Co., Pittsburgh, Pa.  
Gummey, McFarland & Co., Phila., Pa.  
Osborn, J. M. & L. A., Cleveland, O.  
Waite, Raulet & Co., Boston, Mass.  
Wood Co., Alan, Philadelphia, Pa.

**Shingles and Tiles, Metallic.**  
Chattanooga Steel Roofing Co., Chat-  
tanooga, Tenn.  
Cincinnati Stamping Co., Cincinnati, O.  
Courtright Metal Roofing Co., Philadel-  
phia, Pa.  
Merchant & Co., Philadelphia, Pa.  
Meurer Bros. Co., Brooklyn, N. Y.  
Montross Metal Shingle Co., Camden,  
N. J.  
Penn Metal Ceiling & Rfg. Co., Phila.,  
Pa.

**Shot.**  
Colwell Lead Co., 63 Centre St., N. Y.

**Siding.** (See Roofing and Siding.)

**Sinks.**  
Lalance & Grosjean Mfg. Co., 19 Cliff  
St., New York.

**Skylights.**  
Canton Steel Roofing Co., Canton, O.  
Chattanooga Steel Roofing Co., Chat-  
tanooga, Tenn.  
Drouve, G. Co., Bridgeport, Conn.  
Gaeburg, Cornice Works, Galena, Ill.  
Mullins, W. H., Salem, O.  
Rasner & Dinger, Pittsburgh, Pa.

**Slaters' Tools.**  
Galt, Jno. & Sons, 253 Broadway, N. Y.  
Salem Nail Co., 279 Pearl St., N. Y.

**Smoke Test Machine.**  
Gunster & Forsyth, Scranton, Pa.

**Snow Guards.**  
Clason Arch. Metal Works, Provi-  
dence, R. I.  
Fulmer, J. H., Nazareth, Pa.

**Solder.**  
Bruce & Cook, 186 to 190 Water St., N. Y.  
Follansbee Bros. Co., Pittsburgh, Pa.  
Gummey, McFarland & Co., Phila., Pa.  
McClure & Co., Pittsburgh, Pa.  
Meurer Bros. Co., Brooklyn, N. Y.  
Taylor, N. & G. Co., Philadelphia, Pa.

**Soldering Coppers.**  
Waterbury Brass Co., 122 Centre St.,  
N. Y.

**Soldering Furnaces.**  
Burgess Soldering Furnace Co., Co-  
lumbus, Ohio.  
Clark Novelty Co., Rochester, N. Y.

**Speaking Tubes and Whistles.**  
Ostrander, W. R. & Co., 22 Dey Street,  
N. Y.

**Specialties, Sheet Metal.**  
Vogel, Wm. & Bros., Brooklyn, N. Y.

**Statuary, Sheet Copper and  
Bronze.**  
Mullins, W. H., Salem, O.

**Steam and Gas Fitters' Supplies.**  
Curtis & Curtis Co., Bridgeport, Conn.  
Walworth Mfg. Co., Boston, Mass.

**Steam and Water Engineering  
and Regulating Specialties.**  
Kieley & Mueller, 7-11 West 13th St.,  
N. Y.

**Steam Traps.**  
Mott, J. L. Iron Works, 84-90 Beekman  
St., N. Y.

**Steel Stamps and Stencil Dies.**  
Schwerdtle Stamp Co., Bridgeport, Ct.

**Stove Cement.**  
Dixon, Jos. Crucible Co., Jersey City,  
N. J.  
Rutland Fire Clay Co., Rutland, Vt.

**Stove Linings.**  
Bridgeport Crucible Co., Bridgeport,  
Conn.  
Hessler, H. E. Co., Syracuse, N. Y.  
Marcy Stove Repair Co., 74 Beekman  
St., N. Y.  
Presbrey Stove Lining Co., Taunton,  
Mass.  
Rutland Fire Clay Co., Rutland, Vt.  
Valentine, M. D. & Bro. Co., Wood-  
bridge, N. J.  
Williams Stove Lining Co., Taunton,  
Mass.

**Stove and Metal Polish.**  
Ayling Bros., Chicago, I. I.  
Hoffman, Geo. W., Indianapolis, Ind.  
Rutland Fire Clay Co., Rutland, Vt.

**Stove Patterns.**  
Cope, G. W., Detroit, Mich.  
Gobelle Pattern Co., Cleveland, O.  
Milwaukee Pattern Works, Mil-  
waukee, Wis.  
Vedder Pattern Works, Troy, N. Y.

**Stove Pipe.**  
Triumph Adjustable Stove Pipe Mfg.  
Co., Peoria, Ill.

**Stove Pipe Thimbles.**  
Baker, L. B. Mfg. Co., Racine, Wis.

**Stove Repairs.**  
Clark, Henry N. Co., Boston, Mass.  
Heath, C. C. & Co., Baltimore, Md.  
Howes, S. M. Co., Boston, Mass.  
Marcy Stove Repair Co., 74 Beekman  
St., N. Y.  
Metropolis Sheet Metals & Stove Re-  
pairing Co., Newark, N. J.  
Troy Nickel Works, Troy, N. Y.

**Stove Trimmings, &c.**  
Fanner Mfg. Co., Cleveland, O.  
Shtields, W. H. & Co., Troy, N. Y.  
Troy Nickel Works, Troy, N. Y.

**Stove Trucks.**  
Howes, S. M. Co., Boston, Mass.  
Tucker & Dorsey Mfg. Co., Indian-  
apolis, Ind.

**Stoves and Ranges.**  
Barstow Stove Co., Providence, R. I.  
Beckwith, P. D., Est. of, Dowagiac,  
Mich.  
Bergstrom Bros. & Co., Neenah, Wis.  
Boynton Furnace Co., 207 Water Street,  
New York.  
Brand Stove Co., Milwaukee, Wis.

Clark, Geo. M. & Co., Chicago, Ill.  
Cole Mfg. Co., Chicago, Ill.  
Cosoy, C. H., Richmond, Va.  
Dighton Furnace Co., Taunton, Mass.  
Floyd, Wells & Co., Poyersford, Pa.  
Fuller & Warren Co., Troy, N. Y.  
Graff Furnace Co., 208 Water Street,  
New York.

Joliet Stove Works, Joliet, Ill.  
Magee Furnace Co., Boston, Mass.  
March Brownback Stove Co., Potts-  
town, Pa.  
Miller, Wm. Range & Furnace Co.,  
Cincinnati, O.

Nye, A. T. & Son Co., Marietta, O.  
Ohio Stove Co., Portsmouth, O.  
Pittsburgh Stove & Range Co., Pitts-  
burgh, Pa.  
Portsmouth Stove & Range Co., Ports-  
mouth, O.

Richmond Company, Norwich, Conn.  
Ringen Stove Co., St. Louis, Mo.  
Schneider & Trenkamp Co., Clevel-  
and, O.

Shepard, Isaac A. & Co., Phila., Pa.  
Smith & Anthony Co., Boston, Mass.  
Somerset Stove Foundry Co., Somerset,  
Mass.

Stamford Foundry Co., Stamford, Ct.  
Walker & Pratt Mfg. Co., Boston, Mass.  
Weir Stove Co., Taunton, Mass.  
White, Warner Co., Taunton, Mass.  
Willard, Wm. G., St. Louis, Mo.

**Stoves and Ranges, Gas.**

Adler H. & Co., Pittsburgh, Pa.  
Clark, Geo. M. & Co., Chicago, Ill.  
Dangler Stove & Mfg. Co., Cleveland,  
Ohio.  
Dighton Furnace Co., Taunton, Mass.  
Howes, S. M. Co., Boston, Mass.  
Metropolis Sheet Metals & Stove Re-  
pairing Co., Newark, N. J.  
Ringen Stove Co., St. Louis, Mo.  
Standard Lighting Co., Cleveland, O.

**Stoves and Ranges, Oil, Vapor  
and Gasoline.**

Clark, Geo. M. & Co., Chicago, Ill.  
Dangler Stove & Mfg. Co., Cleveland,  
Ohio.  
Heath, C. C. & Co., Baltimore, Md.  
Ringen Stove Co., St. Louis, Mo.  
Schneider & Trenkamp Co., Clevel-  
and, O.  
Standard Lighting Co., Cleveland, O.  
Taylor & Boggis Foundry Co., Clevel-  
and, O.

**Tank Heaters.**  
American Radiator Co., Chicago, Ill.

**Tanks, Steel and Wood.**  
Edwards, J. H., 59 Park Place, N. Y.

**Terne Plates.**  
American Tin Plate Co., New York.  
Taylor, N. & G. Co., Phila., Pa.

**Tinners' Tools, Machines and  
Supplies.**

Berger Bros. Co., Phila., Pa.  
Bertsch & Co., Cambridge City, Ind.  
Bliss, E. W. Co., Brooklyn, N. Y.  
Bruce & Cook, 186 to 190 Water St.,  
New York.  
Follansbee Bros. Co., Pittsburgh, Pa.  
Keene, Geo. C. & Co., Cincinnati, O.  
Meurer Bros. Co., Brooklyn, N. Y.  
Niagara Machine & Tool Wks., Buffalo,  
N. Y.  
Ohi. Geo. A. & Co., Newark, N. J.  
Peck, Stow & Wilcox Co., 27 Murray  
St., New York.

Stiles & Parker Press Co., Brooklyn,  
N. Y.  
Welss, H. & Co., 20 Cliff St., N. Y.

**Tinners' Trimmings.**  
Vogel, Wm. & Bros. Brooklyn, N. Y.

**Tin Plate.**  
American Tin Plate Co., New York.  
Bruce & Cook, 186 to 190 Water St.,  
New York.

Coe, Jas. A. & Co., Newark, N. J.  
Follansbee Bros. Co., Pittsburgh, Pa.  
Gummey, McFarland & Co., Phila., Pa.  
McClure & Co., Pittsburgh, Pa.  
Merchant & Co., Philadelphia, Pa.  
Meurer Bros. Co., Brooklyn, N. Y.  
Osborn, J. M. & L. A., Cleveland, Ohio.  
Taylor, N. & G. Co., Philadelphia, Pa.  
Waite, Raulet & Co., Boston, Mass.

**Tinware.**  
Shepard, Sidney & Co., Buffalo, N. Y.

**Tools and Machines, Steam and  
Gas Fitters'.**  
Curtis & Curtis Co., Bridgeport, Conn.  
Saunders, D. Sons, Yonkers, N. Y.

**Torches, Plumbers.**  
Clayton & Lambert Mfg. Co., Detroit,  
Mich.

**Trade Schools.**  
New York Trade School, 1st Ave., 67th  
and 68th Streets, N. Y.

**Vacuum Heating System.**  
Trane, J. A. Vacuum Heating Co.,  
Chicago.

**Valves.**  
Am. Steam Gage & Valve Mfg. Co.,  
Boston, Mass.  
Crosby Steam Gage & Valve Co., Bos-  
ton, Mass.

Jenkins Bros., 71 John St., New York.  
Monash-Yunker Co., Chicago, Ill.  
Morgan & Co., Chicago, Ill.  
Trane, Jas. A. Vacuum Heating Co.,  
Chicago.

**Ventilating Apparatus.**  
American Blower Co., Detroit, Mich.  
Buffalo Forge Co., Buffalo, N. Y.

**Ventilators and Chimney Caps.**  
Berger Bros. Co., Phila., Pa.  
Buffalo Forge Co., Buffalo, N. Y.  
Fenn, Geo. E., Boston, Mass.  
Globe Ventilator Co., Troy, N. Y.  
Kramer Bros., Dayton, O.  
Merchant & Co., Philadelphia, Pa.  
Meurer Bros. Co., Brooklyn, N. Y.  
Washburne, E. G. & Co., 46 Cortlandt  
St., New York.

**Washers, Valves, &c.**  
Littleford Bros., Cincinnati, O.  
Marston, I. G. & Co., Boston, Mass.

**Water Coolers.**  
National Enameling & Stamping Co.,  
78 Beekman St., N. Y.

**Water Closets.**  
Adee, Fred. & Co., 90 Beekman St., N. Y.  
Colwell Lead Co., 63 Centre St., N. Y.

**Water Fronts.**  
Clark, Henry N. Co., Boston, Mass.

**Water Heaters.**  
Adam, W. J., Joliet, Ill.  
Kemp, C. M. Mfg. Co., Baltimore, Md.

**Wind Gates.**  
Miner & Peck Mfg. Co., New Haven, Ct.

SEE ALPHABETICAL INDEX PAGE 65.

# THE METAL WORKER.

With which is Incorporated The Stove and Tin Trade Journal, The Sheet Metal Builder, and Metal.

Published Weekly at the Following Subscription Price:

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# LABOR EXCHANGE.

Notices under this heading of reasonable length are inserted free of charge. Only those relating to employment are admitted. Write distinctly on one side of paper only, and do not use postal cards.

Original letters of reference should not be inclosed with replies to advertisements appearing in these columns as they are frequently mislaid and lost. A copy of the reference will serve the purpose.

## HELP WANTED.

**GALVANIZED SHEET IRON WORKERS.** Apply to Geo. Mention, foreman, B. F. Sturtevant Company, Jamaica Plain, Boston, Mass. Aug. 23

Ten first-class **SHEET METAL WORKERS**; those accustomed to metal window work preferred. Rasner & Dinger Company, Pittsburgh, Pa. Aug. 23

A first-class **TINSMITH** for inside and outside work; none but a sober and reliable man need apply; a steady job the year round to the right man; state age, experience and wages wanted. M. J. Shaut, Hornellsville, N. Y. Aug. 23

**TINSMITH** and **SHEET METAL WORKER**; must be first-class workman, temperate, some knowledge of piping preferred; state wages and experience; steady job to right man. Geo. W. Huff, Sanford, Me. Aug. 23

**TINNER** wanted at once; young, single man, good on roofing, spouting and job work, fair knowledge of furnace work; must be sober and steady; steady job to right party. Albert Lehmann, 2593 Union street, Chicago, Ill. Aug. 23

**SALESMAN** to travel in Western Pennsylvania, Ohio, Indiana and Illinois, by manufacturers of a large staple line of hardware; one well acquainted with the territory preferred; state salary expected and give references. "Hardware Manufacturers," care *The Metal Worker*, New York. Aug. 23

A traveling **SALESMAN** on salary and expenses for Southern territory; must have traveled years in that section; no other need apply; one experienced in enameled ware preferred; letters to receive attention must state age and detailed previous connections. "H. K. & F.," care *The Metal Worker*, New York. Aug. 23

**SHOP CLERK**; a man of experience and a man who is competent to take charge of all material that leaves the shop for contracts or day work where there are from 40 to 60 men employed, keep men's time and charge up all material on the slips; none but competent, sober and reliable men need apply; steady work for right man and good wages; in Pennsylvania town. Address, in your own handwriting, "F. R.," care *The Metal Worker*, New York. Aug. 23

**TINSMITH**; must be a first-class furnace-man and thoroughly familiar with all branches of the business; steady job to a good man; no others need apply; state wages and experience. The C. H. Avery Company, Nashua, N. H. Aug. 23

A steady, reliable **FURNACEMAN** and **SHEET METAL WORKER**; quick and first-class, temperate and reliable; state age and experience; the right party can have this position as long as he wants it. "Heating," Binghamton, N. Y. Aug. 23

Competent man for laying out heavy sheet iron work, such as brichlings and smoke stack work. American Blower Company, Detroit, Mich. Aug. 23

At once, a **CORNICE MAN** capable of making estimates from blue prints and giving cost on all sheet metal work; will give good wages and steady job to a sober, industrious man; will have entire charge of cornice department; good wages and steady work. Box 84, care *The Metal Worker*, 1205 Fisher Building, Chicago, Ill. Aug. 23

A **SUPERINTENDENT** and **MANAGER** in a company manufacturing stoves, soil pipe and fittings, or either; one who understands the business from foundry to salesroom; plant is complete, first-class and run by the best of water powers; present manager obliged to quit on account of poor health; chance of a lifetime for the right man. Box 83, care *The Metal Worker*, 1205 Fisher Building, Chicago, Ill. Aug. 23

A good, reliable **TINNER**, **ROOFER** and **FURNACEMAN** at once. P. Moran & Son, Lockport, N. Y. Aug. 23

**TRAVELING SALESMAN** covering Central and Southern New York, to handle as a side line a good standard line of tin goods; no samples to carry. "Side Line," care *The Metal Worker*, New York. Aug. 23

A first-class **TINNER**, **SLATER** and **FURNACEMAN**; good on inside and outside work; must understand country work; also a first-class **PLUMBER**; must be competent to handle any plumbing or steam heating work; good wages to reliable men; no others need apply. W. H. Stoyale, Huntington, N. Y. Aug. 23

September 1, a first-class **STOVE PATTERNER FITTER**; must be steady, sober and reliable; state age and experience; permanent position to right party; give references and wages expected. The W. J. Loth Stove Company, Waynesboro, Va. Aug. 23

**PLUMBER**, first-class, accustomed to windmill work preferred; steady work to the right man; references. B. F. Lockhill, Columbus, N. J. Aug. 23

A first-class **SHEET IRON WORKER** used to making steel range bodies; also four **MOLDERS** on sanitary pipe fittings; piece work. Michigan Heater Company, Big Rapids, Mich. Aug. 23

A first-class **PLUMBER**, good at jobbing; one who has some knowledge of tin work preferred; state wages wanted for a steady job. W. A. Barry & Co., Kittanning, Pa. Aug. 23

First-class **TINSMITH** who can do all kinds of jobbing and furnace work; steady job, work all the year; state wages wanted, also references. "Hardware," Box 271, Gloversville, N. Y. Aug. 16

A good, all around **TINNER** for inside and outside work; hot air furnace work, &c.; must be sober and reliable; steady work for the right man. E. M. Shoupe, Fremont, Ohio. Aug. 16

A first-class **TINNER**, **SLATER** and **FURNACEMAN**; a regular job to the right man; state wages wanted and experience. A. J. Kennard, Roanoke, Va. Aug. 16

**SLATERS**, **TINNERS** and **CORNICE MAKERS**; reliable men. Apply to H. C. Hines & Co., Detroit, Mich. Aug. 16

A competent **FOREMAN**; one who is thoroughly posted in cornice, slate and steel ceiling work; must be a sober man; a married man preferred; good salary. John Boland, proprietor New Globe Cornice Works, 226 West Main street, Decatur, Ill. Aug. 16

At once, by an all around man at plumbing, tinning and heating; all correspondence promptly answered. Box 91, Winchendon, Mass. Aug. 16

A good **TINNER** for inside work. Carnahan Stamping & Enamelling Company, Canton, Ohio. Aug. 16

**TINSMITH'S HELPER**. A. A. Hislop, 2 Selgrest street, Newark, Wayne County, N. Y. Aug. 16

A man who knows enough about the tinners' trade to make sheet iron stoves. E. B. Colby & Co., Hoboken avenue, Jersey City, N. J. Aug. 16

One or two good **TINNERS**; must know slating, too; none but sober men need apply. W. N. Johnson, 533 Main street, Richmond, Ind. Aug. 16

Three **TINNERS**; men with some knowledge of plumbing and heating preferred; state wages expected. Spratt & Corcoran, 48 Court street, Watertown, N. Y. Aug. 16

Two men, one **TINNER**, one **PLUMBER**; would prefer all around men; wages, \$2.75 per day for competent men; eight hours' work; steady. B. G. Leeper, 374 Main street, Ansonia, Conn. Aug. 16

At once, a good cornice and skylight maker as **FOREMAN** who is a good cutter; must be sober and reliable and know how to work men to advantage, including roofing line if necessary; wages \$3 per day, eight hours; steady job all year to right man. "Employer," Box 573, Meridian, Miss. Aug. 16

Good **TINNER** and **CORNICE WORKER**; 22½ cents per hour and steady work to right man. Chas. F. Hauck & Co., 35 West Main street, Springfield, Ohio. Aug. 16

A **PLUMBER**, **STEAM** and **HOT WATER HEATING**; one with some knowledge of roofing and tin work preferred; to such will be given steady work at fair wages; must be sober and reliable and give reference. Lock Box 83, Gowanda, N. Y. Aug. 16

One **PLUMBER** and **STEAM FITTER**; also **JUNIOR PLUMBER** and **STEAM FITTER**. Apply at once; state experience. Post Office Box 24, Fort Wayne, Ind. Aug. 16

A first-class **TINSMITH** with experience or cornice and furnace work; state experience; steady work the year around. Bruno Martin & Son, 814 Janes avenue, Saginaw, Mich. Aug. 16

Five or six **PLUMBERS** and **STEAM FITTERS**; 30 cents per hour for plumbers and 30 cents per hour and board for steam fitters; must work in nonunion shop. West Virginia Heating & Plumbing Company, Charleston, W. Va. Aug. 16

Two good **CORNICE** and **SKYLIGHT WORKERS**; state age, experience and wages expected. Apply at once to Callanan Bros., contractors, Keeseville, N. Y. Aug. 16

**SALESMAN** to sell mica as a side line; liberal commission and no samples. "Mica," care *The Metal Worker*, New York. Aug. 9

Two first-class **TRAVELING SALESMEN** of good character, familiar with steam and hot water heating apparatus; state experience, age, &c. Gurney Heater Mfg. Company, Boston, Mass. Aug. 9

## SITUATIONS WANTED.

Young man as **PLUMBER**; just out of his time; would like to get in shop where there is a chance for advancement. "Moore," 72 West 100th street, New York. Aug. 23

In city or country as **PLUMBER**, **GAS** and **STEAM FITTER**. Geo. Conlin, 499 West 124th street, New York. Aug. 23

**TINSMITH**; proficient in all branches of city and country work; would like a good, steady position in city or country; temperate and reliable; moderate wages; A1 references. Frank M. La Seur, 77 Barrow street, New York. Aug. 23

By a practical **TINNER**. E. P. Ketcham, P. O. Box 673, Wellington, Ohio. Aug. 23

**PLUMBER** wants work, city or country; licensed in New York and Yonkers; has had charge of shop, also of work; quick, honest and sober; willing to act in any capacity. Thomas Moran, 71 West Ninety-sixth street, New York. Aug. 23

By a first-class **PLUMBER** in the country. "F. R.," 38 St. Mark's place, New York. Aug. 23

By young man as **PLUMBER**; just out of his time; can do lead work. "W. H.," P. O. Box 409, Patchogue, L. I., N. Y. Aug. 23

By a young man; four years at plumbing and roofing; would like steady position to finish trade. "H.," 52 State street, Montpelier, Vt. Aug. 23

As outside **SALESMAN**; have had 12 years' road experience; familiar with house furnishing, ranges and furnaces and hardware specialties; highest references as to ability as a salesman. "G. F. P.," care *The Metal Worker*, New York. Aug. 23

By a first-class **PLUMBER** and **GAS FITTER**; good lead worker; handy at tin and stove work; will work for moderate salary; can furnish reference. Louis Bykefer, 1996 Fulton street, Brooklyn, N. Y. Aug. 23

By an experienced **PLUMBER**; knowledge of steam heating. "B. J.," care *The Metal Worker*, New York. Aug. 23

By an all around man at plumbing, tinning and heating; all correspondence promptly answered. Box 91, Winchendon, Mass. Aug. 23

As **HEATING** and **VENTILATING ENGINEER** to take full charge of outside constructing work with a reliable house where a practical man will be recognized; 20 years' experience constructing engineer. "Construction Work," care *The Metal Worker*, New York. Aug. 23

By **COPPER**, **TIN** and **SHEET IRON WORKER**; 18 years' experience. "G. A. H.," 718 Second street, Louisville, Ky. Aug. 23

As **FOREMAN** in malleable or gray iron foundry; 25 years' experience; understand handling men and arranging patterns to be made to the best advantage; a sample sent of malleable made from cupola; four years' experience in Stahl Foundry. "J. B.," care *The Metal Worker*, New York. Aug. 23

**TINNER** desires to make a change September 10; 35 years old; 16 years' experience in job, furnace and assortment work; references if required. G. Sherman, 1227 East Fifth street, Dayton, Ohio. Aug. 23

By **TINSMITH**; good inside and outside worker and first-class tank liner; would be willing to go out of town. "J. K.," care *The Metal Worker*, New York. Aug. 23

A thorough mechanic in sheet metal construction; understand skylight, cornice, roofing, ventilating and jobbing of all descriptions, also light iron construction; good estimator and cutter of patterns; engagement as **ESTIMATOR** and **OUTSIDE SUPERINTENDENT**. D. Brown, General Delivery, New York City. Aug. 23

As **FOREMAN CUTTER** and **ESTIMATOR** in a first-class cornice and skylight shop, by one who has had considerable experience at the same; is a first-class mechanic in all branches of the business and understands the handling of men to best advantage. "S. A. G.," care *The Metal Worker*, New York. Aug. 16

A first-class **SALESMAN** would like a position with some good stove or tinware manufacturing house located in Connecticut, Rhode Island or Massachusetts; can speak German and English and has long experience as a salesman. "New England," care *The Metal Worker*, New York. Aug. 16

By a **TIN** and **SHEET IRON WORKER**; nine years' experience at general jobbing, roofing, steam heating and pump work; steady, sober and reliable; wages \$11 per week for permanent position; references. "TinSmith," Danielson, Conn. Aug. 16

By **PLUMBERS' HELPER**, aged 19 years; have served three years at the trade; strictly sober. Arthur McElroy, 206 High avenue, Nyack, N. Y. Aug. 16

**CORNICE** and **SKYLIGHT MAKER**; good draftsman; South preferred. W. D. Bannan, 264 North Darlen street, Philadelphia, Pa. Aug. 16

By young man as **PLUMBER**; seven years' experience in New York shops. Emil H. Hill, Jr., Oyster Bay, L. I., N. Y. Aug. 16



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| <input type="checkbox"/> Cornicemaker           | <input type="checkbox"/> Electrician            |
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| <input type="checkbox"/> Ornamental Designer    | <input type="checkbox"/> Motorman               |
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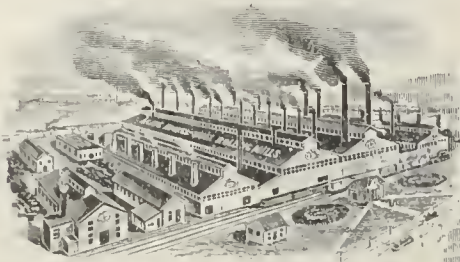
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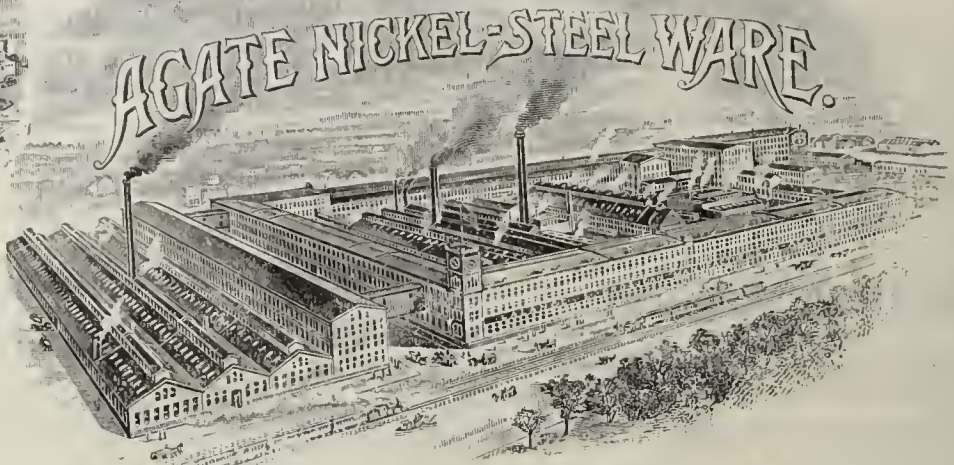
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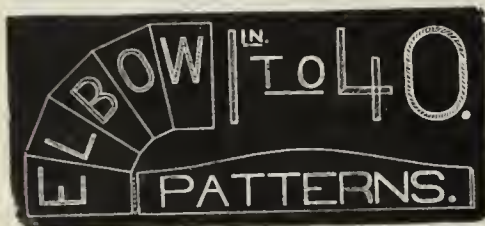
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— "AND now, my children," said the teacher, who had been talking about military fortifications, "can you tell me what is a buttress?"

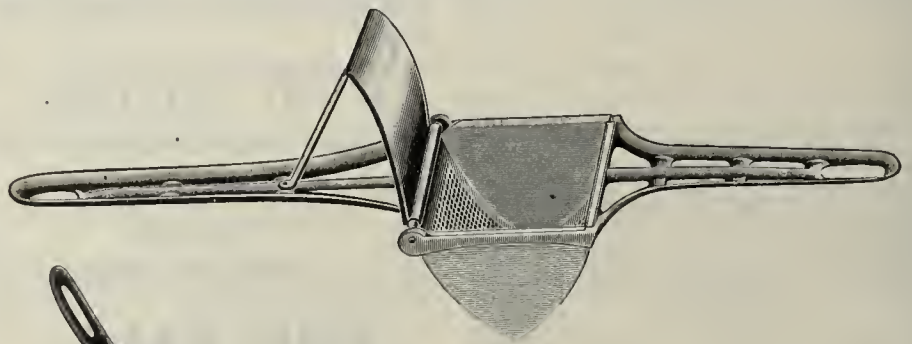
"Please, ma'am," cried little Willie, snapping his fingers, "it's a nanny goat."  
— *Exchange*.

— **BLOBS**: "Miss Oldgirl isn't the bud she used to be."

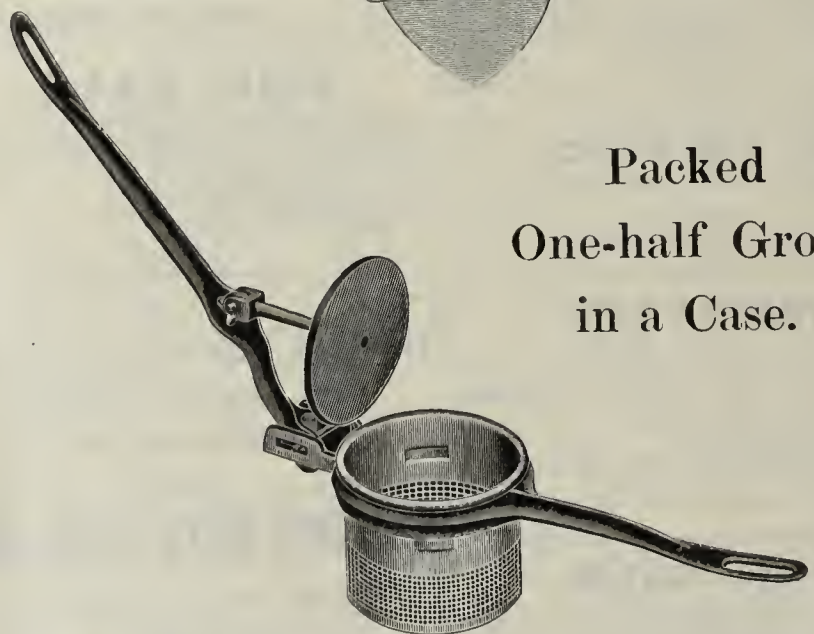
**Slobbs**: "No; she looks more like a full blown century plant." — *Exchange*.

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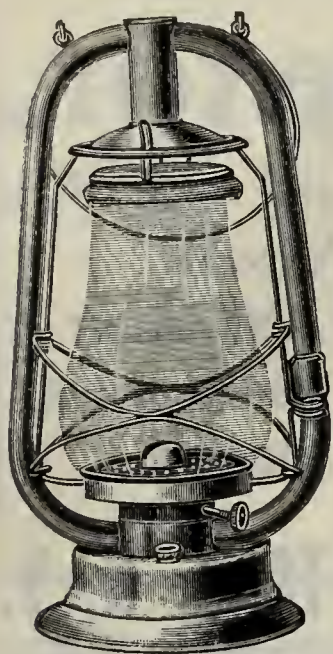
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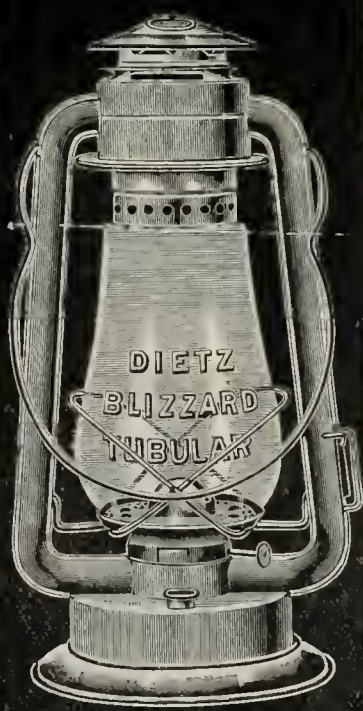
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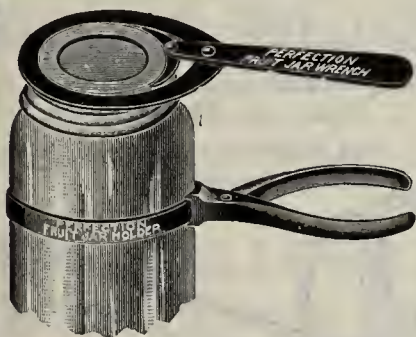
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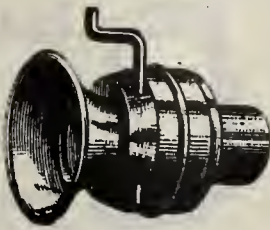
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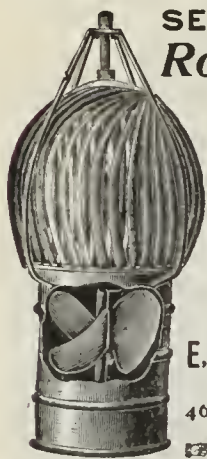
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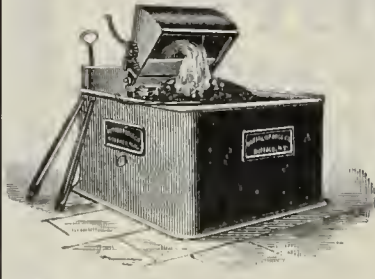
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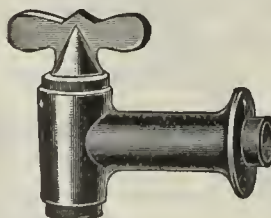


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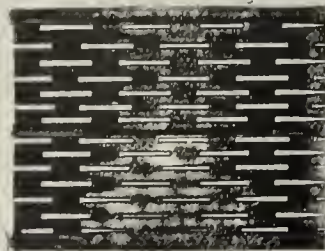
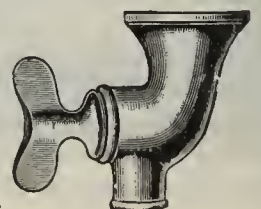
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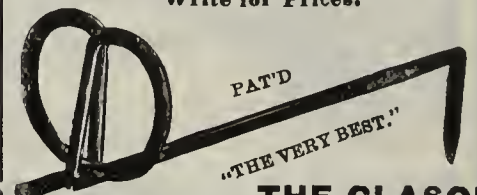


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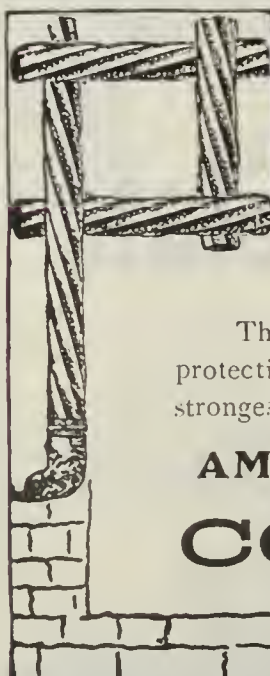


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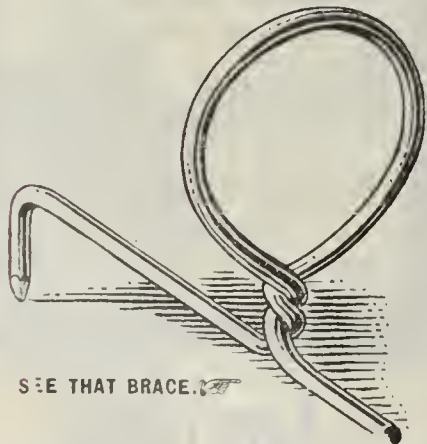
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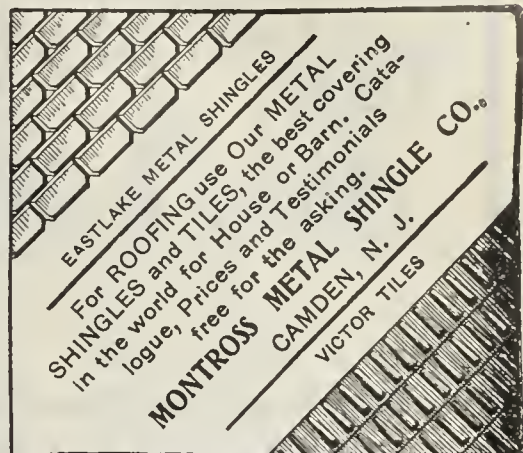
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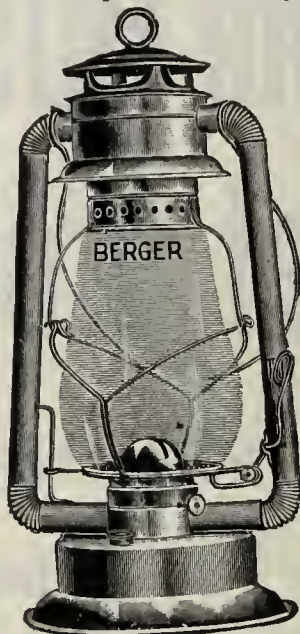
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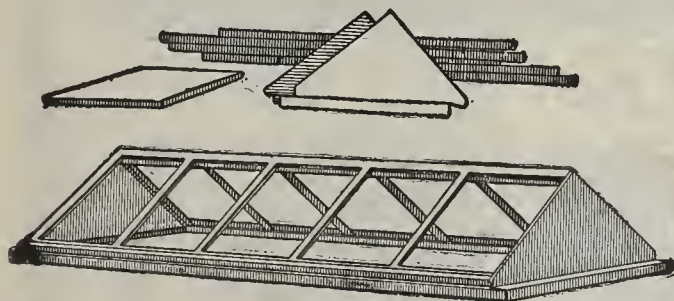
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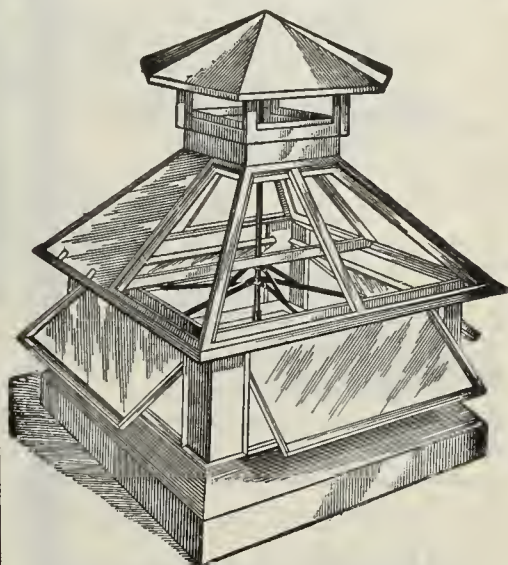
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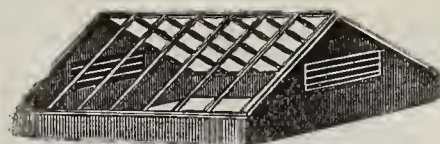
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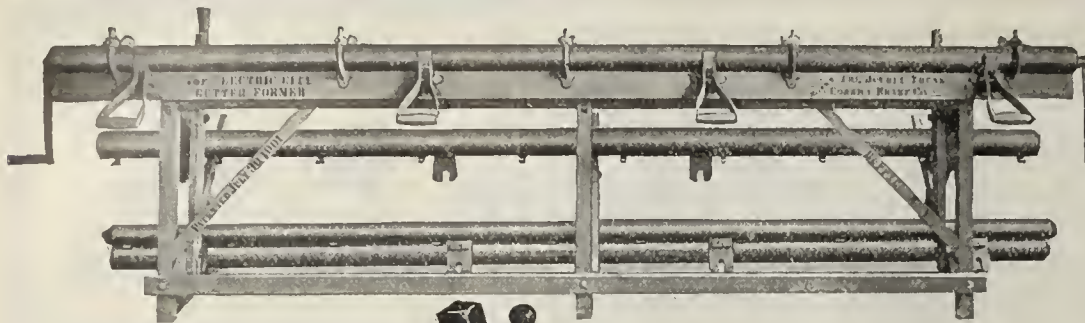
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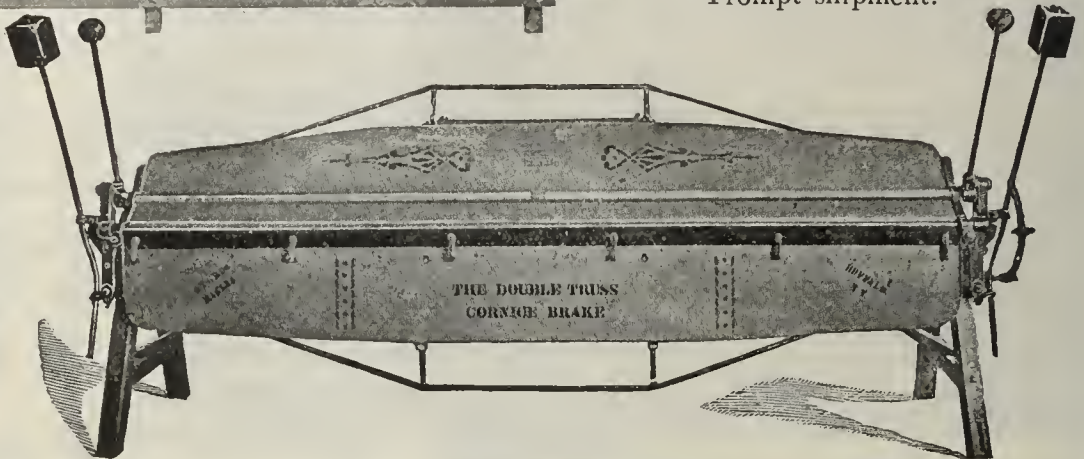




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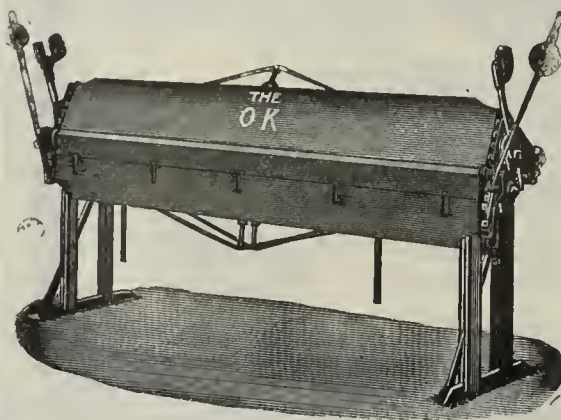
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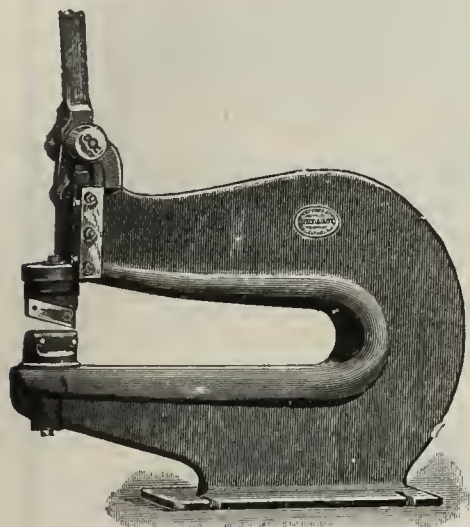
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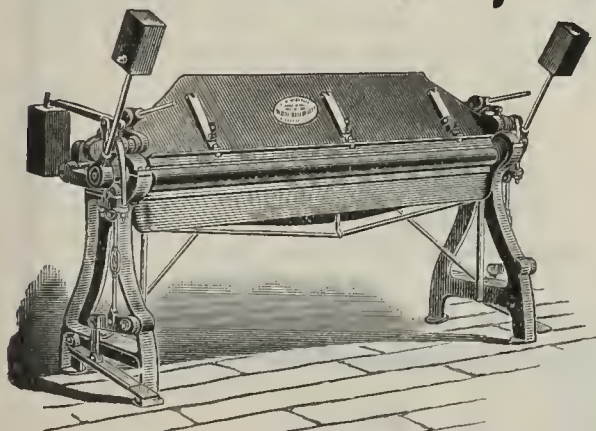
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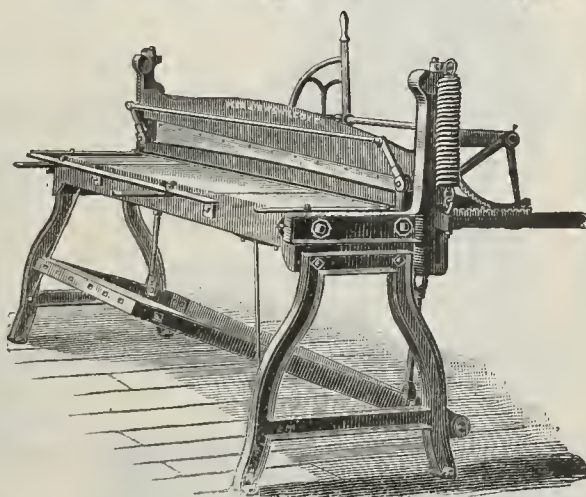
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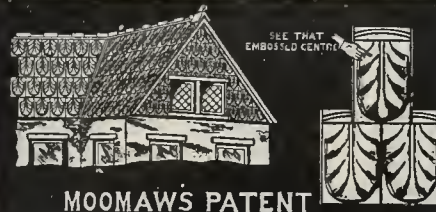
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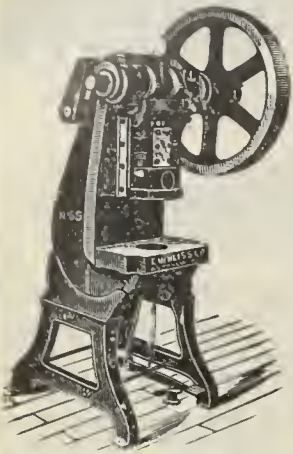
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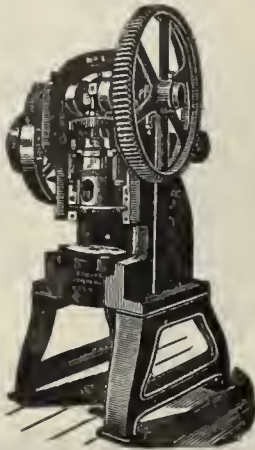
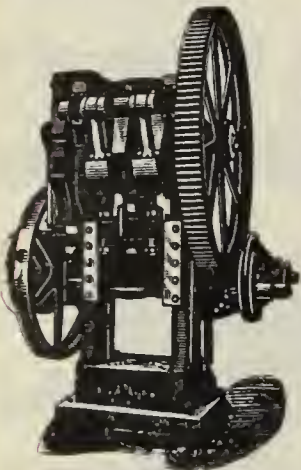


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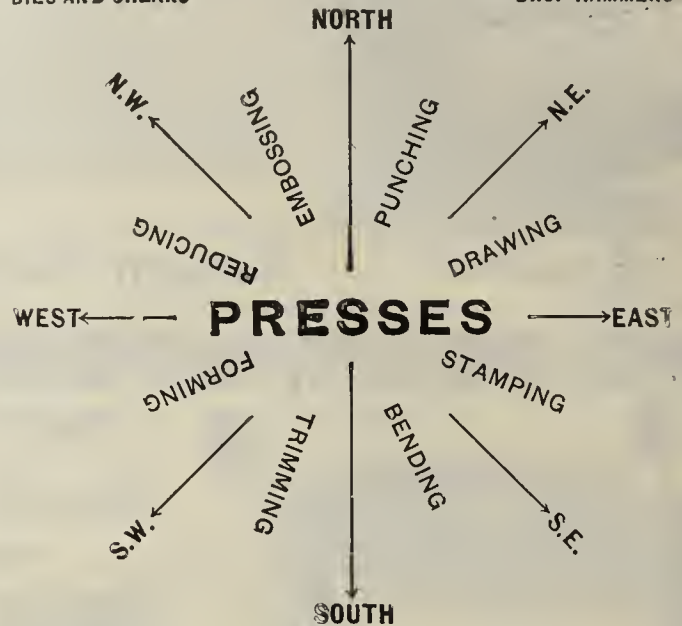
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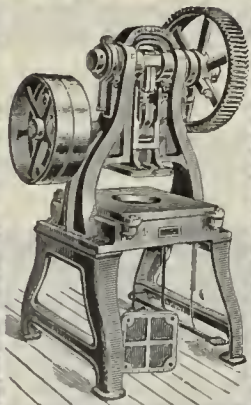


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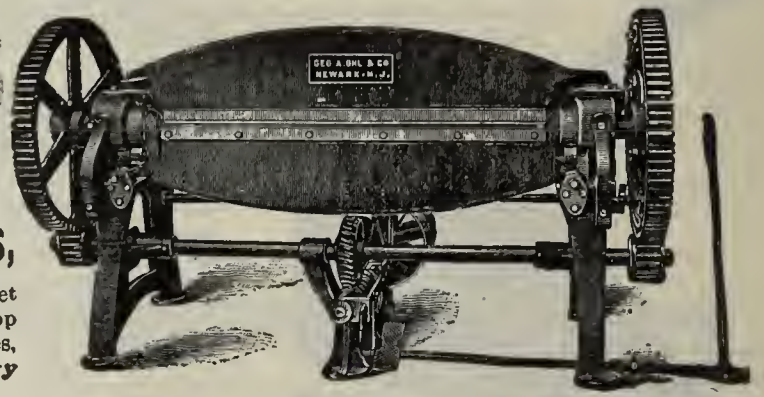
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Heavy and Light

### Squaring Shears,

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Heavy Automatic Power Brake.

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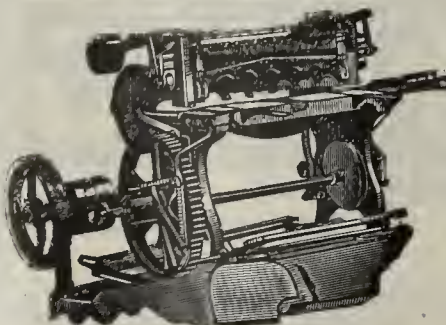
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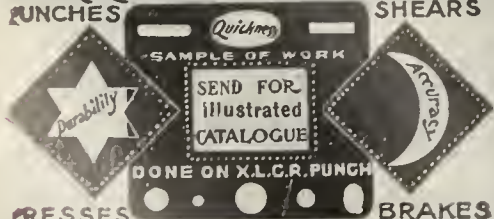
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PUNCHES SHEARS



PRESSES BRAKES  
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DEEP THROAT PUNCHING PRESS.



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Will shear as heavy  
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or Iron. Very power-  
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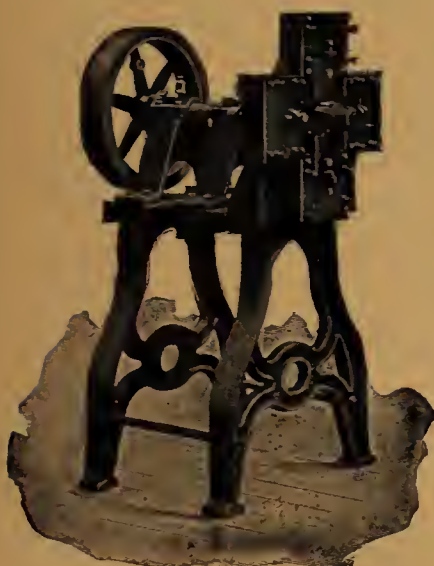
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Corrugated Conductor Pipe and Eave  
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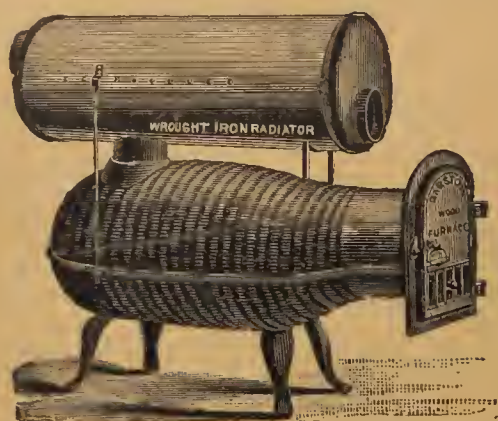
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which usually goes to waste about the farm  
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**ROOFING, CORNICE, TIN, PLUMBING AND HEATING**  
**STOVE, TRADES.**

With which is Incorporated The Stove and Tin Trade Journal, the Sheet Metal Builder, and Metal.

VOL. LVIII.  
 NUMBER 9.

NEW YORK AND CHICAGO, AUGUST 30, 1902.

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 Quick sellers bring big profits.

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*And in races with his pony he won many  
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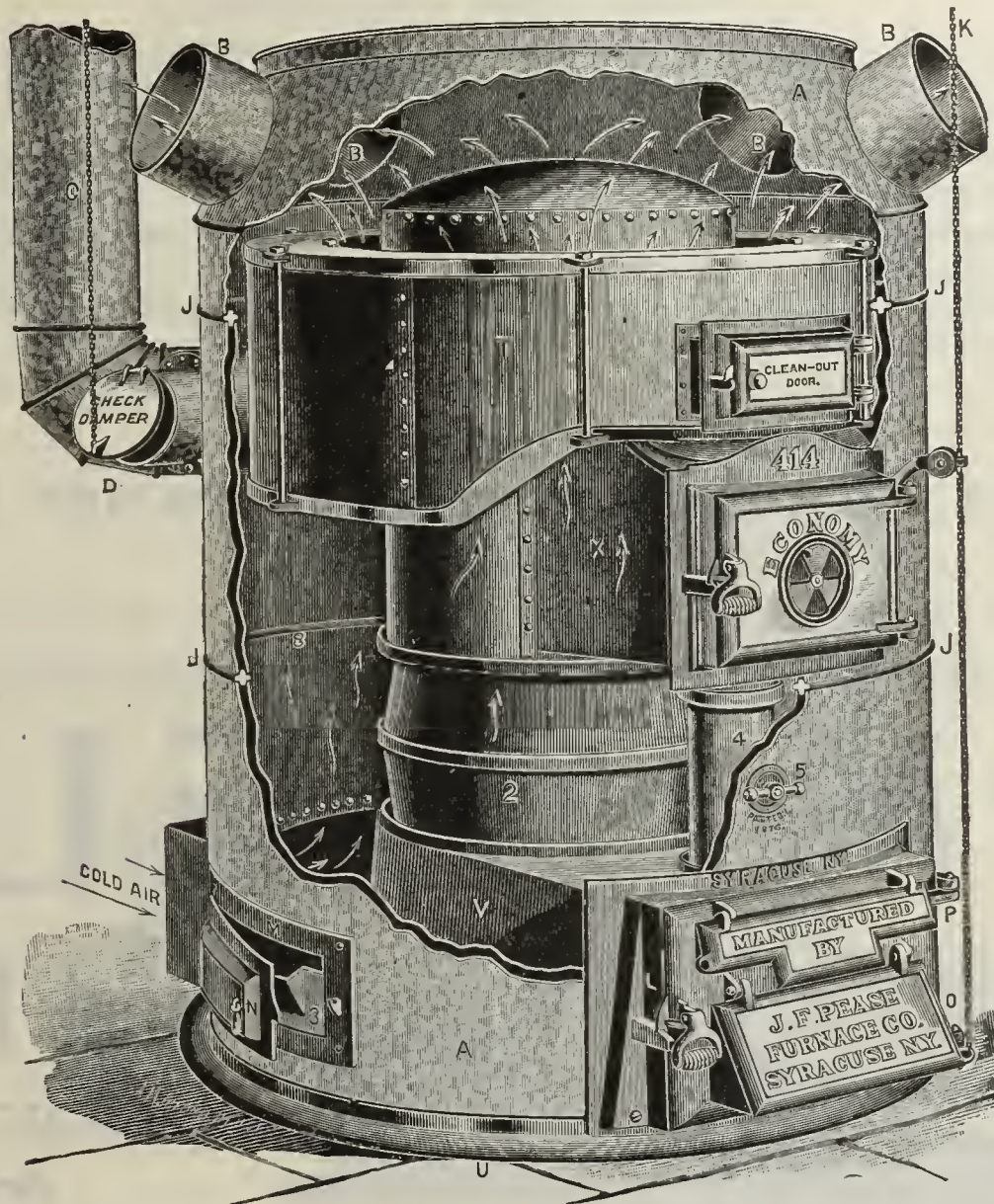


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From Top to Bottom,  
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are in every way up to our standard. For a stove nothing more as to quality can be said.



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None better.  
Made of polished  
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Powerful and  
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For sale by  
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RELIABLE Oil Heaters have always been conceded Leaders. This season they are finer than ever. TO THE RELIABLE IS DUE THE CREDIT OF THE PERFECTION AND POPULARITY OF THE OIL HEATER TO-DAY. Our Gas Heater line is the largest and most complete. Write for catalogue and prices.

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Two 15-inch burners, with four rows of gas orifices in each, produce a terrific fire which quickly sets the incandescent brick clinkers to glowing, and the MONARCH Ventilating and Radiating System of pipes combine to make this the equal of a *hard coal base burner*.

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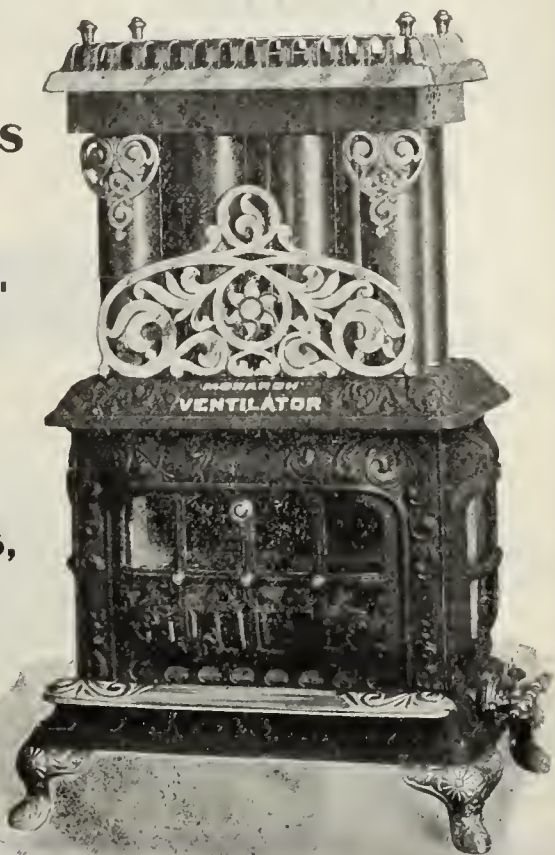
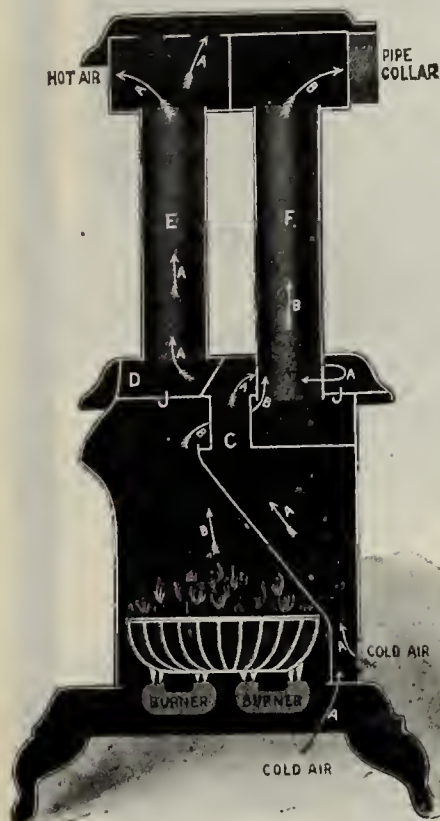
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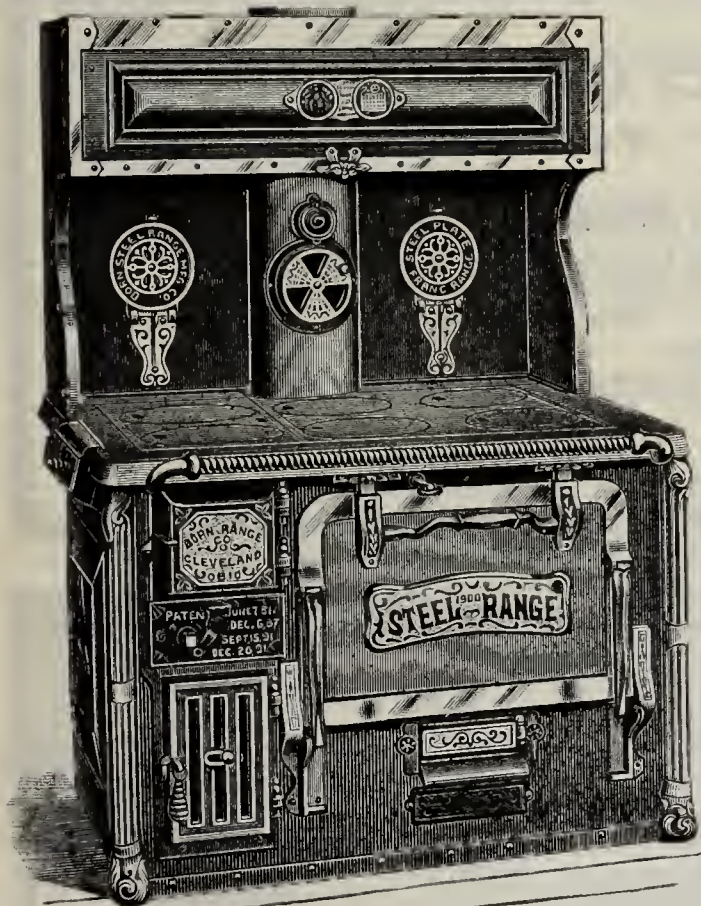
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Combine all the features necessary to make them *high grade* Ranges.



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The Best and Cheapest Line of Wood Furnaces. . . .  
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Our Goods are Strictly  
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We make 65 Styles and Sizes of  
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**FURNACES  
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**HOT WATER  
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HOT AIR**



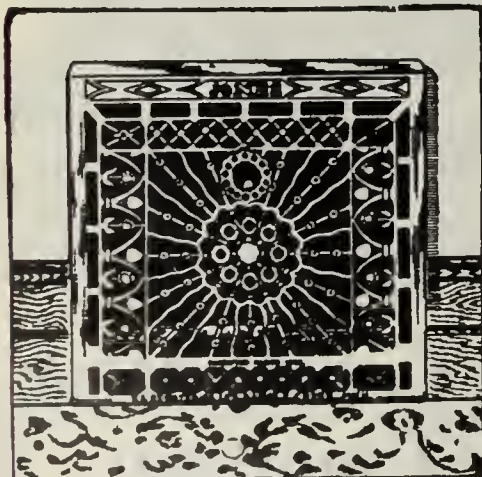
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Heat Water Quickly.  
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They have Double Ventilated  
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"NEW PROCESS" AND "STANDARD" OIL HEATERS.

MADE BY **THE STANDARD LIGHTING CO.**  
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Sold by Jobbers and Dealers everywhere.



**I Will Give the Public the Benefit.**

Having completed patterns for my 1902 line, I will close  
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**400 LB. WILLARD STEEL RANGE for \$15.00.**

*This is Less than 4c. per pound.*

They have six 8 inch lids. Oven, 17 x 21 x 12. Top Cook-  
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EVERY ONE GUARANTEED. BUY NOW AND SAVE 100%.  
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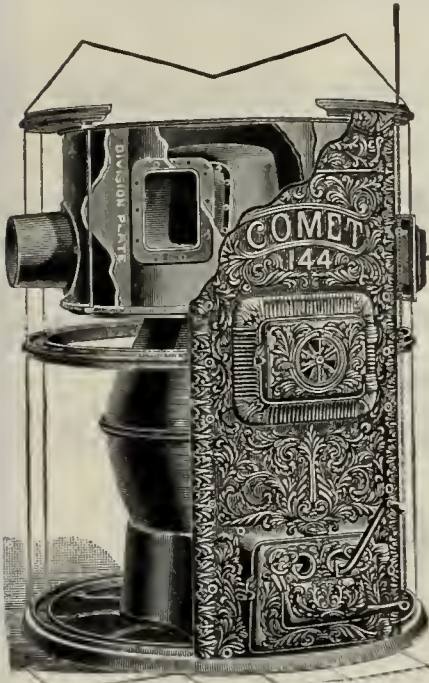


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## FURNACES, RANGES AND STOVES

THE OLDEST STOVE FOUNDRY IN AMERICA

SINCE 1830 MAKERS OF CELEBRATED

THOUSANDS IN USE 1000 IN A SINGLE CITY  
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Both furnaces are well made—all exposed parts heavy. *A generation of constant service establishes their record for durability, economy, powerful heating, easy to set, simple to operate.*

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The COMET radiator is made of heavy cold rolled steel. Fire pot and exposed parts especially heavy and durable.

The COMET is made for satisfactory service and not for PRESENT cheapness, ENDING IN EARLY DESTRUCTION.

OUR GUARANTEE follows everything we make, whether stoves, ranges or furnaces, and is established by our over 70 years' record.

Also an elegant and new line of OAK STOVES

Send for Catalogue, Capacities and Prices



STAMFORD COMBINATION HEATER

HOT AIR AND HOT WATER OR HOT AIR ONLY, AS ORDERED

The above cut shows interior form of water section, giving an idea of its great heating surface and consequent power.

THE STAMFORD FOUNDRY COMPANY  
STAMFORD, CONN

## Artistic Enameled Steel Ranges. . .



The only Enameled Ranges on the market to-day. Are not to be confused with the Black Japan and so-called baked enameled ranges which will burn off and rust. Our Enamel being fused with the iron is guaranteed rust and fire proof.

The Highest Grade of materials only are used in the construction of our ranges and our Enameling Process is the only successful one.

An ornament to the kitchen and a delight to the housekeeper because so easily kept BRIGHT and CLEAN by use of soap and water, doing away with the objectionable stove polish.

An attractive line and ready sellers. Send now for Illustrated Catalogue.

THE ST. LOUIS ENAMELING COMPANY,

S. E. Cor. Ninth and Monroe Streets, ST. LOUIS, MISSOURI.

We do enameling of Specialties and our line of Enameled Steel Signs cannot be excelled.



The miners' strike continues. Its black blight is felt everywhere. Misery, bloodshed and disaster are in its track; and the future is dark. It should end, even if both sides must fail. The cost of fuel will be damaging to every business and will cause untold distress to the poor. It were better for men that millstones were hanged about their necks and they cast into the sea than for them to be guilty of further prolonging this iniquitous strike.

We manufacture a complete line of heating and cooking stoves constructed especially for bituminous coal—also wood burners. Fuel savers, perfect in operation. Our trade name, "Sunshine," is famous everywhere and stands for the best among stoves.

Our catalogue is worth having.

This is the second season for the

### Mystic Sunshine Range,

and its popularity is still increasing. Made in all sizes. For bituminous coal, anthracite coal, or wood. A specialty. Selling faster than any range ever made. Send for circular.




---

The Reading Stove Works, Orr, Painter & Co.,  
Sunshine Stove Shop, Reading, Pa.

Phila.

Chicago.

Boston.

Buffalo.



**THE H. B. SMITH CO.**  
**WESTFIELD, MASS., U. S. A.**

Catalogue furnished only upon application to  
**Heating Contractors, Engineers and Architects**

92 Pages. Size 9 x 12 Inches.

**COTTAGE  
BOILERS.**

STEAM BOILERS (8 SIZES), 550 SQ. FT. RADIATION SUPPLIED.  
WATER BOILERS (8 SIZES), 900 SQ. FT. RADIATION SUPPLIED.

PACIFIC COAST AGENTS  
**HOLBROOK, MERRILL & STETSON,**  
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EUROPEAN AGENTS  
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SALESROOMS :

**THE H. B. SMITH CO.,**

**133 CENTRE STREET,  
NEW YORK.**

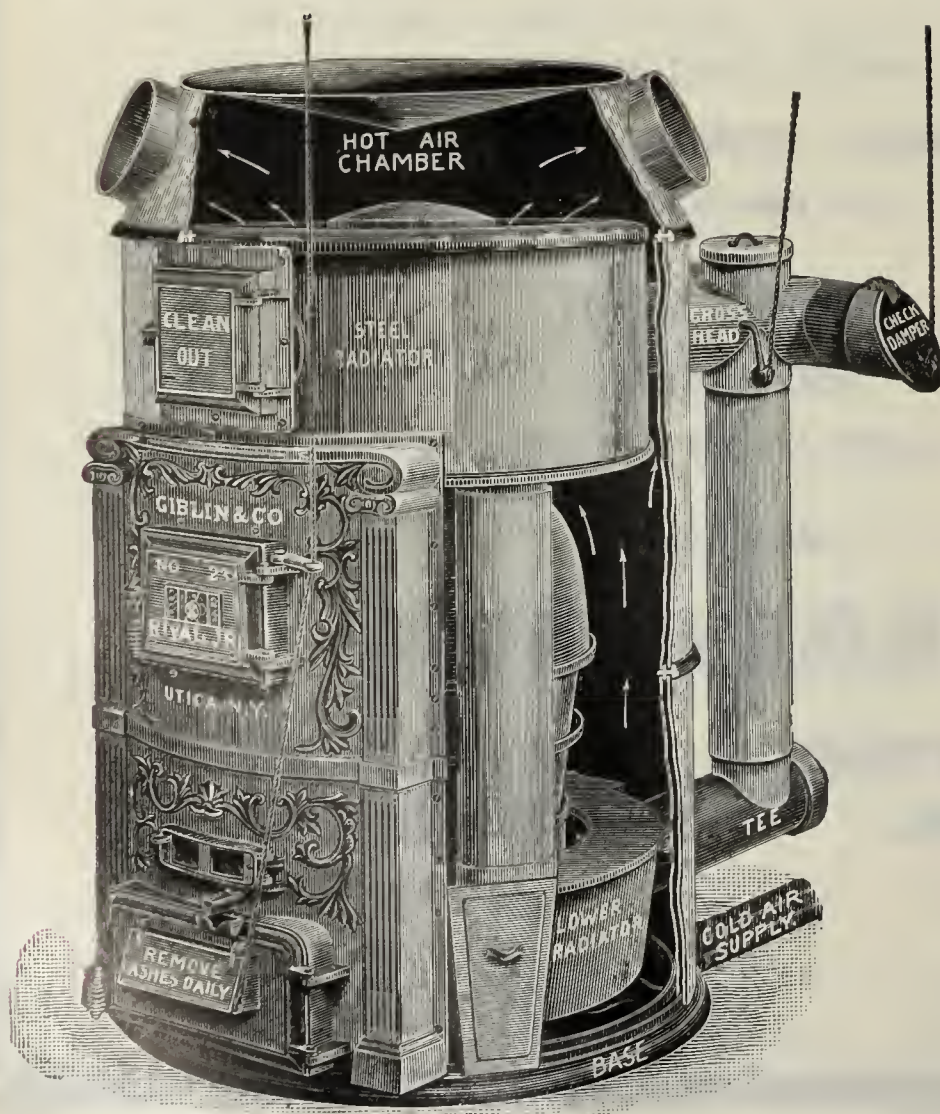
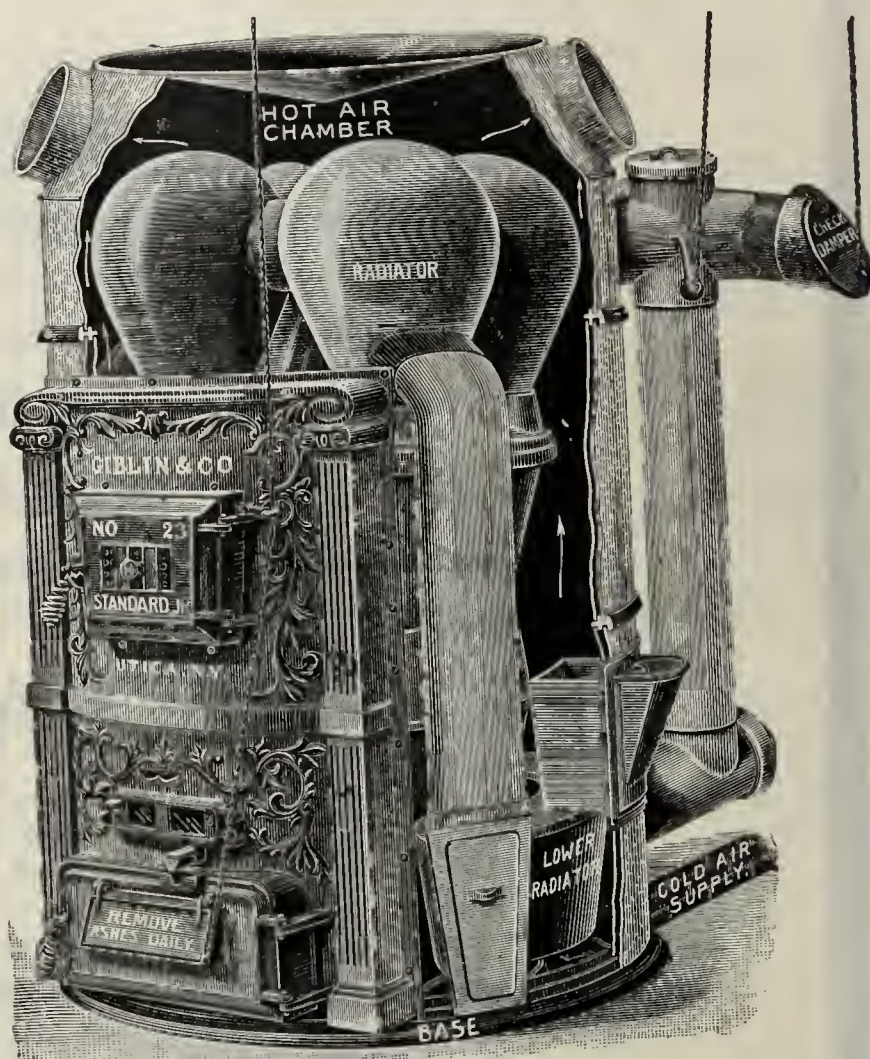
**510 ARCH STREET,  
PHILADELPHIA.**



# COAL IS HIGH

in price and hard to get at any price. It is therefore necessary to look carefully after coal consumption and the furnace that will produce maximum heat with minimum fuel is sure to receive the warm attention of furnace buyers. We would ask dealers to examine the construction of the furnaces illustrated herewith and they will see at a glance that with such construction every pound of fuel will be used and

## NONE WASTED.



These furnaces produce

### Warm Rooms

and

### Cool Smoke Pipe

which means

### Many Dollars Saved

to the man who pays for the fuel.

We have just issued a **NEW CATALOG** and want every dealer to have a copy.

### We Give Exclusive Sale

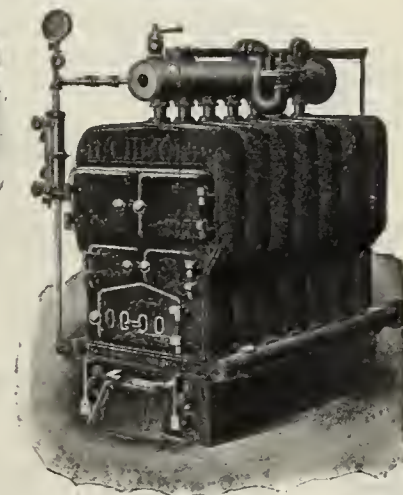
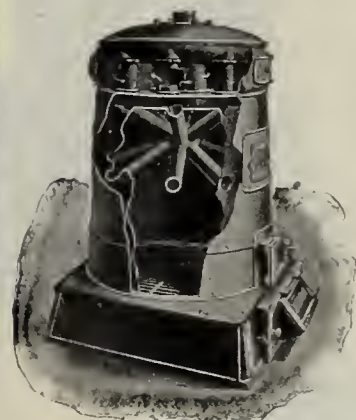
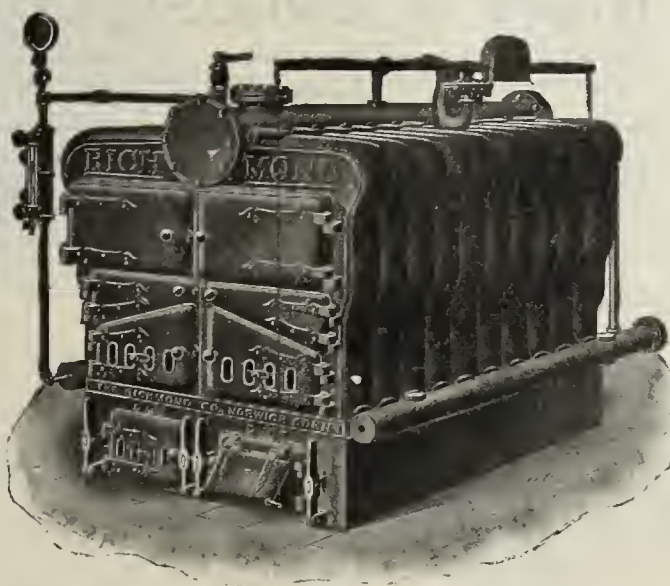
where we are not represented.

## GIBLIN & CO.

UTICA, N. Y.



**T**HE season is now approaching when you will be *too busy* to consider the fine points of distinction between one boiler and another.



Why should you postpone another day informing yourself fully about the good points of . . . .

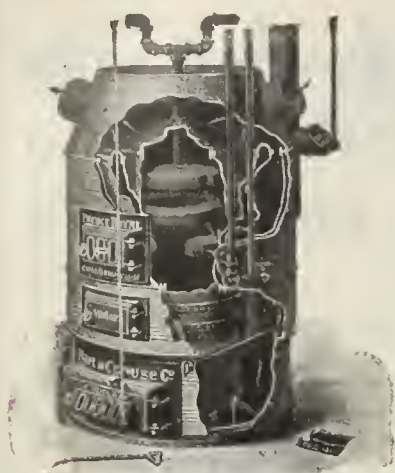
# RICHMOND BOILERS

SEND FOR OUR NEW **1902** CATALOGUE. DON'T FORGET  
TO ASK FOR PRICES ALSO.

**THE RICHMOND COMPANY,** NORWICH,  
CONN.

NEW YORK, PHILADELPHIA, PITTSBURGH, CHICAGO, ST. LOUIS,  
738 Park Row Bldg. 18-24 So. 7th St. 210 Ferguson Bldg. Chicago Heater & Supply Co. Rumsey & Sikemeier Co.





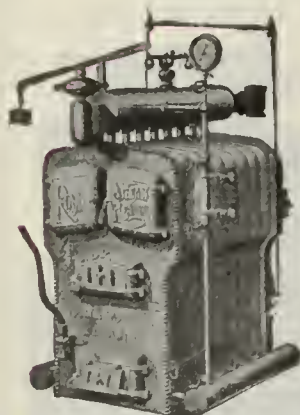
# Royal Heaters.

**HART & CROUSE CO.,**

235 Water St., 78 Lafayette St., 79 Lake St.,  
New York, UTICA, N. Y. Chicago.

The Leading Line of Heating Apparatus.

**HOT WATER,  
STEAM,  
HOT AIR.**



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G  
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L**



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U  
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S**

**Are TIGERS for heating.**

Every time you think of furnaces to hold trade and get new customers we want you to write **BENGAL FURNACES** big on your mind.

We want you to do this because it is as good a thing for us to have the **BENGAL** handled by progressive furnace men as it is for progressive furnace men to handle the **BENGAL**.

*Send for particulars.*



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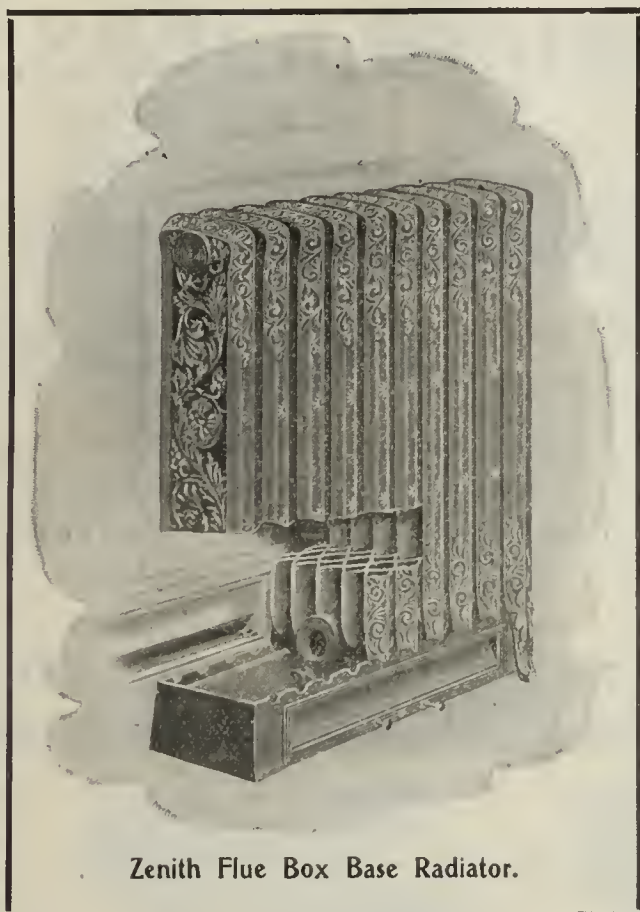
**GURNEY & CO.,**

Washington, Hanover and Elm Streets, Boston, Mass.

**FLOYD, WELLS & CO., Royersford, Pa.**

NEW YORK OFFICE, 210 WATER ST., R. W. HILLMAN, Manager.





Zenith Flue Box Base Radiator.

## OUR ZENITH PATTERNS OF RADIATORS

are used in Park Row Building, New York; Stock Exchange, Hotel Touraine, Hotel Marie Antoinette, Bank of New York, St. James Building, Barnard College New Buildings, D. O. Mills' Hotels Nos. 1 and 2, W. W. Astor Apartment Building, all of New York City; Forts Hancock and Wadsworth; P. O. Building, Washington, D. C.; Union Station, Pittsburgh; Broad Street Station and Arcade Building, at Philadelphia etc., etc., etc. These Radiators may therefore be said to have secured the endorsement of a large number of the most prominent heating engineers in the United States.

Send for New 1902 Catalog.

**AMERICAN RADIATOR COMPANY**

Lake and Dearborn Streets, CHICAGO.

New York. Boston. Philadelphia. Buffalo. St. Louis. Minneapolis. Denver.

## THE CROWN "LOW DOWN" FURNACE

Competes with Steam and Hot Water Heating.

1st—In heating at long distance.

2nd—In an economical consumption of fuel.

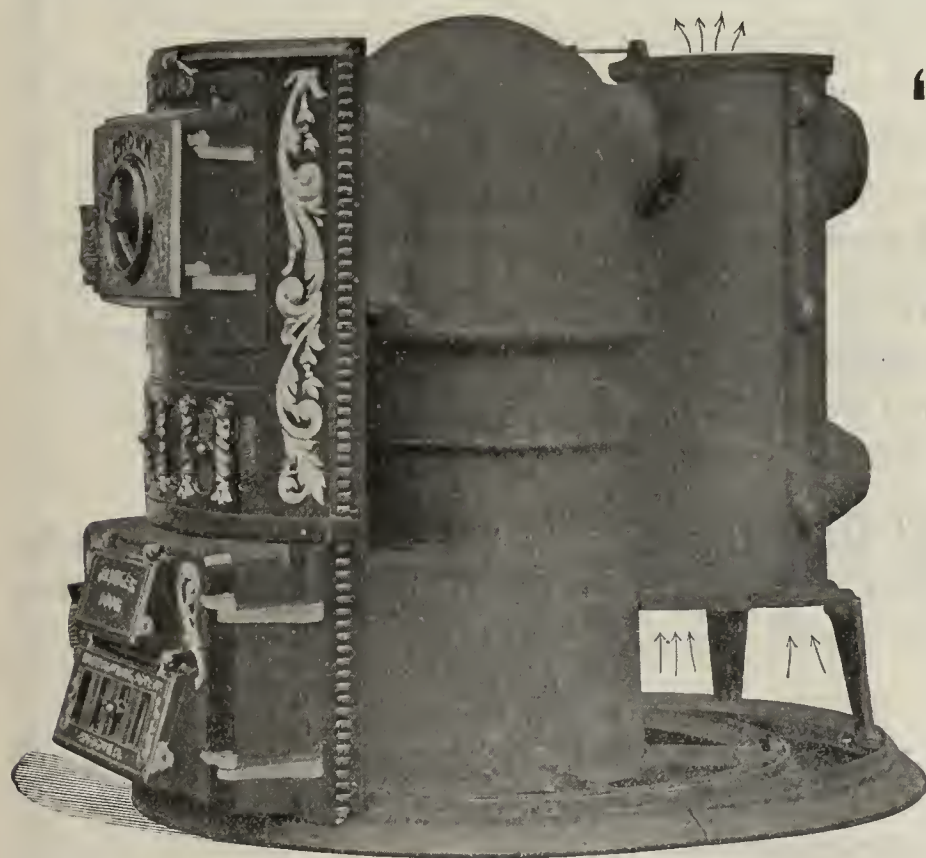
OUR CROWN LOW DOWN FURNACE IS  
**SUPERIOR TO STEAM AND HOT WATER.**

1st—In its simplicity of management, any ordinary help can manage this furnace.

2d—In its economy of repairs, repairs being only needed at long intervals, the skilled mechanic not required to repair this furnace.

3d—*Most important of all* is the purity of air supplied. It's the ideal sanitary house heating construction. Any one caring for the good health and comfort of the home should not fail to examine this furnace before installing any other system of heating.

**March-Brownback Stove Co.**  
POTTSTOWN, PA.



# BRAND STOVE CO.

STOVES, RANGES and  
FURNACES.

SEND FOR CATALOG.

MILWAUKEE, WIS.



# BOYNTON'S SCHOOL HEATERS.



## OF ALL SCHOOL FURNACES

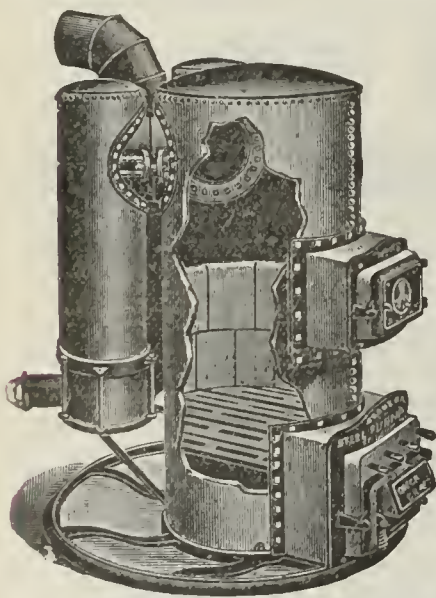
THE LARGEST; THE HEAVIEST;  
THE MOST DURABLE; THE  
GREATEST RADIATING SURFACE;  
THE ONLY SELF-CLEARING  
FURNACE;  
GAS TIGHT; SMOKE TIGHT; DUST  
TIGHT; THE BEST GRATE.

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PRICES ON APPLICATION.

~ ~ ~

*The* **BOYNTON FURNACE CO.,**  
NEW YORK. CHICAGO.



## A FEW POINTS OF SUPERIORITY

**F**ire pots are of fire clay tiling and never burn out.

**R**adiator surface in proportion to grate surface unusually large.

**O**nly absolutely gas tight furnace made.

**N**ovelty of construction makes an easy seller.

**T**ested for fifteen years.

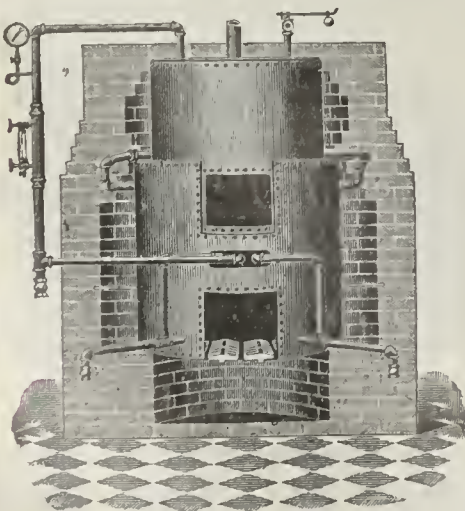
**R**epairs are seldom necessary.

**A**re guaranteed to burn hard or soft coal.

**N**o direct draft to warp out of shape, nor packed joints to leak gas.

**K**atalogue and prices will be mailed you upon application.

**FRONT RANK STEEL FURNACE CO., 2301 to 2309 Lucas Ave., St. Louis, Mo.**



**THE  
MAXIM**

**A Steel Brick-Set Boiler for Steam and Water  
Heating—Hard or Soft Coal.**

**HAS AN ESTABLISHED REPUTATION.**

**SOLD ON MERIT.**

**PRICES TO THE TRADE ONLY.**

**KEWANEE BOILER COMPANY**

**Chicago Store, 169 E. Lake St.**

**KEWANEE, ILL.**

Eastern Representatives:

**MODEL HEATING CO.,**  
Philadelphia, Pa.  
New York, N. Y.  
Buffalo, N. Y.  
Boston, Mass.





## Absolutely Right.

"Gurney" Heaters are made in various kinds, in all sizes, but only in one quality, **the best**. We never sacrifice quality for price—and the prices are no higher than for many inferior makes.

### "GURNEY" HEATERS, BRIGHT IDEA, DORIC and 400 SERIES.

offer you more business opportunities than any other heater—the best apparatus for each class of wants, which can be easily sold, not on claims, but on what it has done and is daily doing; with prices no higher than those of many inferior makes.

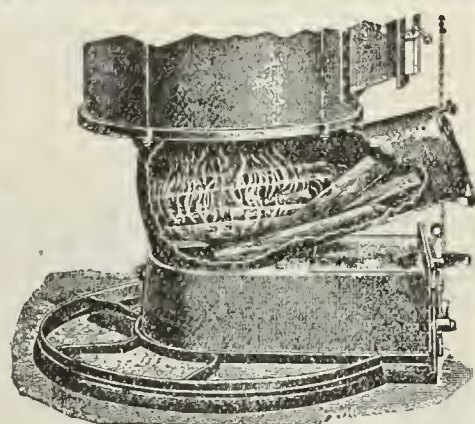
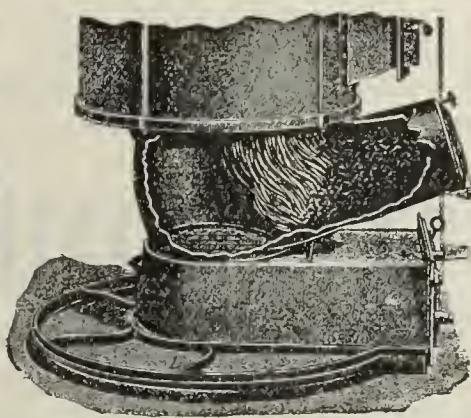
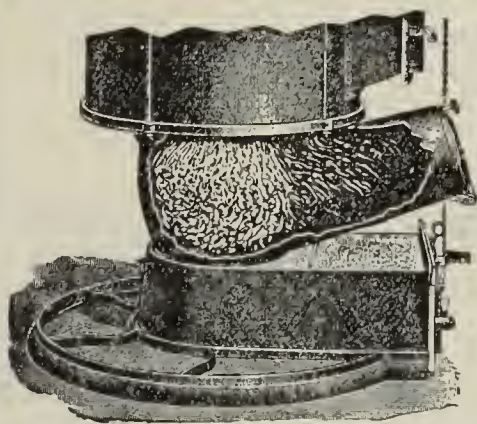
Write for full particulars and latest trade catalogue.

### Gurney Heater Mfg. Co.,

74 Franklin St., Boston.

111 Fifth Ave., New York City.

Western Selling Agents, James B. Clow & Sons, 358 Franklin St., Chicago, Ill.



### THREE PRACTICAL USES

to which the *Combination* Fire Bowl and *Coking Magazine* used on the **PATRIC FURNACE** may be put.

The first cut shows soft coal undergoing coking process in magazine, with coked coal in main bowl. *A great fuel saver.* Second cut illustrates fire carried only in magazine, for light Spring and Fall heating, *a great convenience.* Third illustration shows furnace used for wood. *A success for twenty years.*

SEND FOR NEW ILLUSTRATED CATALOGUE.

**THE PATRIC FURNACE CO., = Springfield, Ohio.**

## THE LION'S SHARE

*Of the Heating Business in your city and vicinity will  
come your way if you handle*

## MUELLER FURNACES AND BOILERS.

Made in all Styles.

For all Kinds of Fuel.

Write for Catalogue and Prices.

EVERYTHING IN THE HEATING LINE.

ESTABLISHED 1857.

**L. J. MUELLER FURNACE CO.,**

190 REED STREET,

MILWAUKEE, WIS.



# UTICA



# HEATERS

This line of heaters is made in six sizes, ranging in capacity from 6,000 to 50,000 cu. ft., with firepots from 18 to 28 inches. Our furnace catalogue describes this line in detail,—as well as our 13 other styles of warm air furnaces and heaters. Send for it.

We also make a complete line of steam and hot water boilers and radiation.

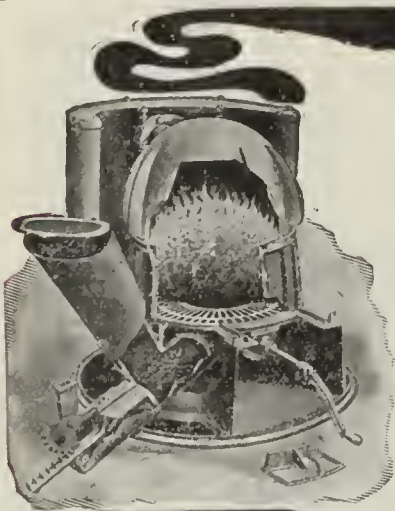
## UTICA HEATER COMPANY,

General Offices,  
UTICA, N. Y.

NEW YORK CITY,  
106-108 Beekman Street.

CHICAGO,  
33 Dearborn Street.

BOSTON,  
24 India Square.



### IF YOU ARE NOT SELLING THE Peck-Williamson Underfeed Furnace

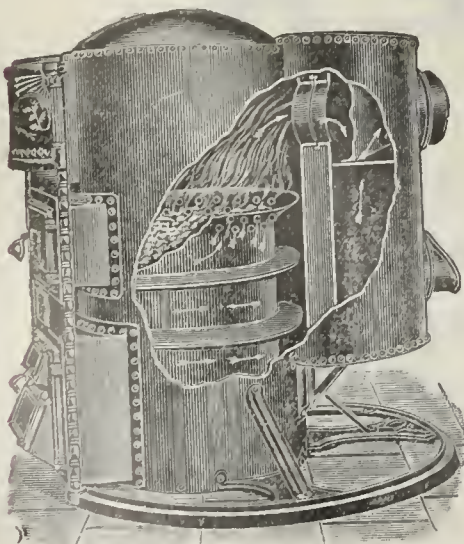
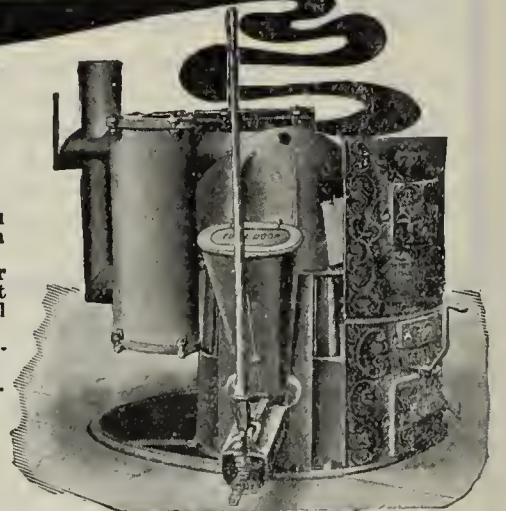
you have not the trade and are not making the money you might. Just a pull or two of the lever feeds the new coal from underneath.

The Underfeed Furnace consumes less fuel than any other furnace ever built. The coal is burnt more slowly. All the heat units from it, as well as from the smoke, are utilized and all smoke eliminated.

Our handsome booklet explains its splendid heating qualities and coal saving.

You may have this booklet and our special plans for selling. Ask for booklet about our Laundry Dryer also.

THE PECK-WILLIAMSON COMPANY,  
CINCINNATI, OHIO.



### WEIR ALL STEEL GAS AND SOOT CONSUMING FURNACE.

THE HEAVIEST STEEL FURNACE MADE.

Absolutely gas and dust tight. A great heat-producer but a fuel saver.

MANUFACTURED BY

THE MEYER FURNACE CO.,

1300-1304 S. Washington St.,

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PEORIA, ILLS.

### "The Handy Furnace Pipe."

MADE WITH A VIEW OF BEING SAFE.

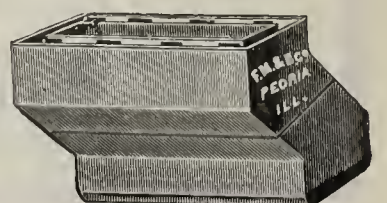
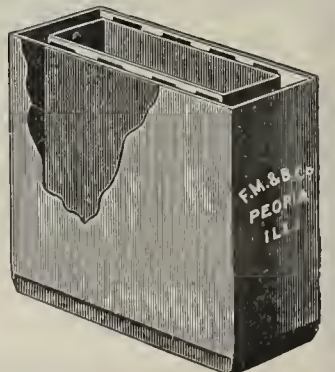
The saving of labor in putting it up really makes it the cheapest hot air pipe on the market.

MANUFACTURED BY

F. MEYER & BRO. CO.,

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PEORIA, ILLS.





# The New WALKER BOILER for Steam: for Water

Our boilers for either Steam or Water Heating will extract more heat from a shovelful of coal and keep the radiation warmer and at a more even temperature than any other boiler. Why? Because every part of its highly effective heating surface in the fire box, or over the fire, is exposed to direct heat. Boilers are fitted with all best and latest improvements, easy to clean flues and to operate. We want you to become acquainted with our productions. It will pay you. Burn any kind of fuel.

**SOLD ON THE HONEST RATING PLAN.**

Catalogue on application.

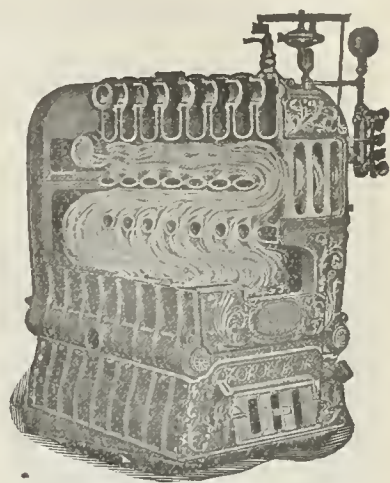
Correspondence and inspection invited

## WALKER & PRATT MFG. CO.,

31-35 UNION ST., BOSTON, MASS.

Finest Factory in this Line in the World.

Prompt Deliveries.



Made in 21 Sizes,  
For Steam or Water.

OFFICE OF  
**M. H. SULLIVAN & SON,**  
High-Glass Painting and Decorating.

FALL RIVER, MASS., January 10, 1902.

DIGHTON FURNACE CO.,  
Taunton, Mass.

*Dear Sirs:* The Dighton Furnace with Hot Water Combination attachment, which was installed in my residence a couple of years ago, is very satisfactory in every way.

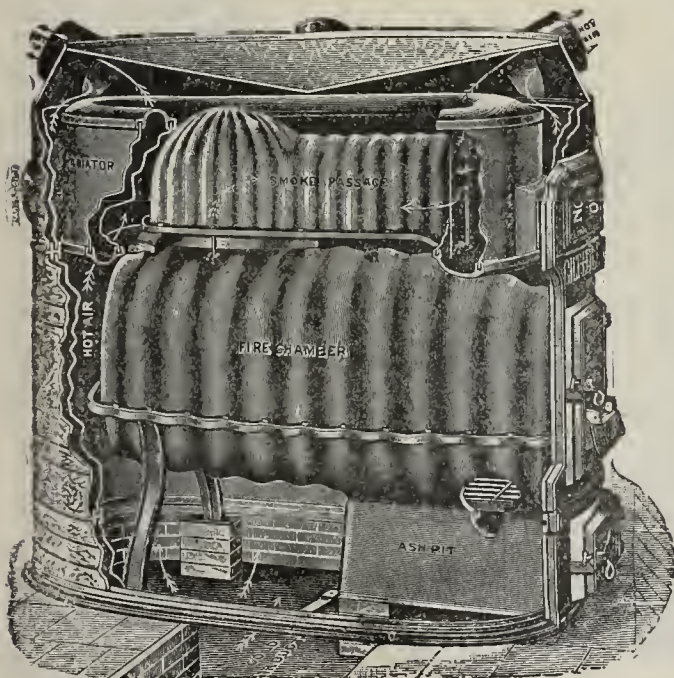
It requires very little care and uses less fuel than any furnace I have ever had any experience with.

Several of my friends now use the "DIGHTON," having bought through my recommendation, and they speak as highly of it as I do, and recommend it, especially for its economy of fuel.

Yours truly,

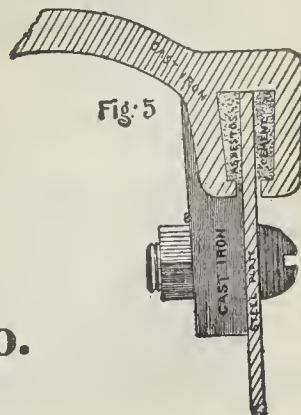
M. H. SULLIVAN.

# GILT EDGE



stands for best when applied to furnaces. The many dealers who have installed and the thousands of householders whose homes have been heated by our furnaces show they like the Gilt Edge, as will be seen by the testimonials they have written. Let us send you a few of them.

The Keystone Joint used in Gilt Edge Furnaces is the only permanent gas tight steel and cast iron joint on the market.



**R. J. Schwab & Sons Co.**  
**MILWAUKEE.**



Established 1850.

# OUR REPUTATION



We've been making high grade heating apparatus for 52 years, until the name "THATCHER" has now a well defined meaning for individual merit. It stands for unrivaled construction and efficiency in operation. It means a better value and a stronger guarantee for the dealer—*things backed by a half century reputation.*

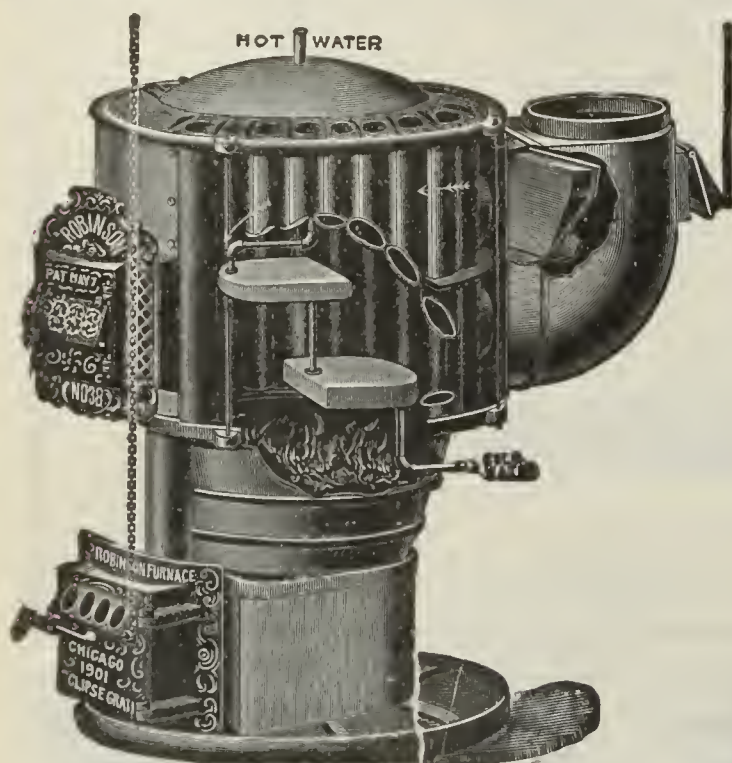
Furnaces. Ranges. Steam and Hot Water Heaters.

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## THATCHER FURNACE CO.,

Works: Newark, N. J.

240 Water St., New York.



## The Robinson Tubular Warm Air Furnaces

give universal satisfaction wherever used.

They are up-to-date in every respect and have many special features not found in other furnaces.

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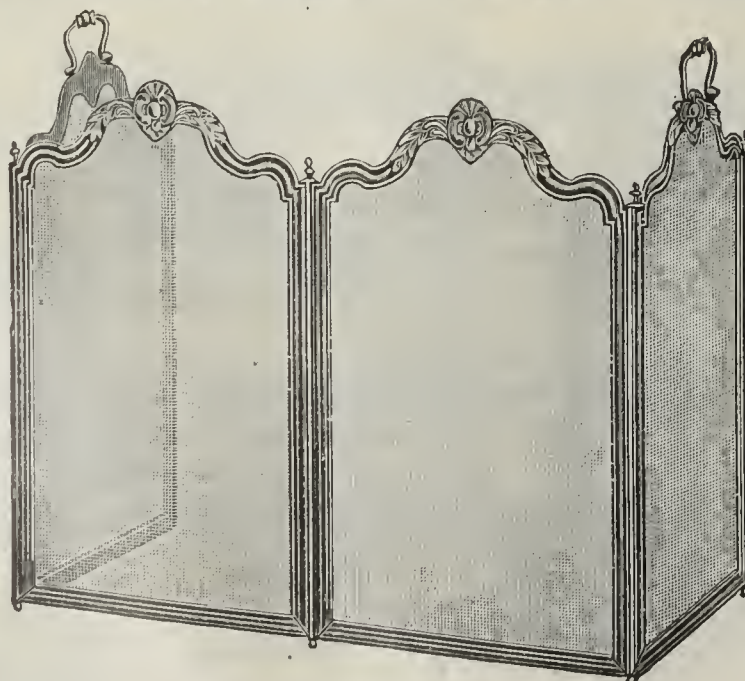
### ROBINSON FURNACE CO., Chicago.

## FRENCH FOLDING SCREENS FOR FIRE PLACES

We are the only manufacturers of this line in the United States.

Send for Our Prices  
Before Importing.

Our screens are heavier, smoother finished, and generally better than the imported article.



Finished in pure brass, gilt, lacquer and Berlin black.

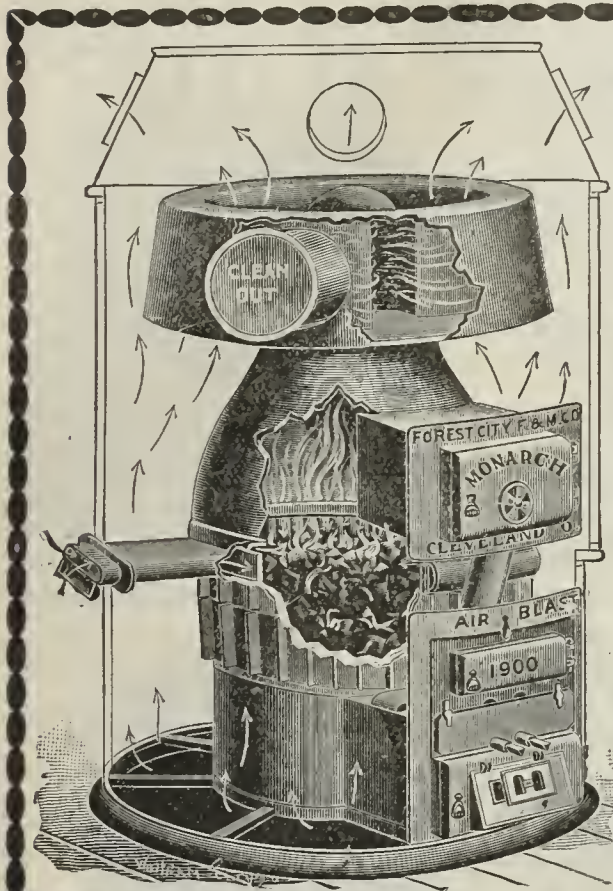
Screens made in the following heights: 18, 20, 26 and 30 inches.

A large variety of styles.

Send for catalogue of  
**Fire Place Goods**  
made of brass, wrought iron and cast iron.

The S. M. HOWES CO., Manufacturers, 42-44-46 Union Street, BOSTON, MASS.





## Monarch Air Blast Furnaces.

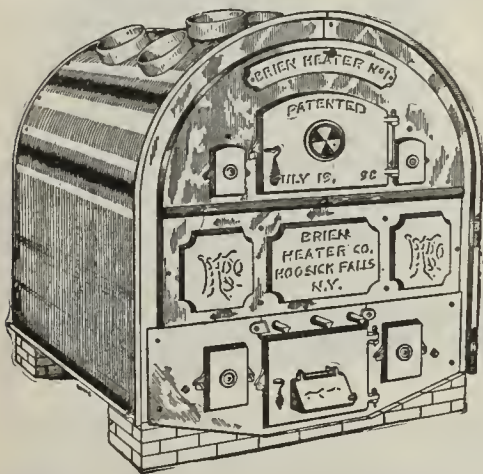
All Cast Iron.  
For Hard and Soft Coal.

Send for 1902  
Catalog and discounts.

The Forest City  
Foundry and Mfg. Co.

81 Elm Street,  
CLEVELAND, OHIO.

Gray Iron Castings to order. High  
grade only.

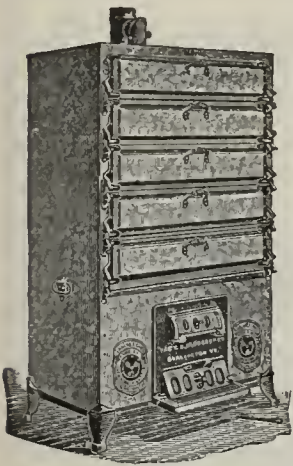


## Brien Heater.

A perfect, all cast WOOD or  
COAL burner. There is no  
other Hot Air Furnace as  
low down as the "BRIEN."

Write for territory, catalog and prices.

BRIEN HEATER CO.,  
HOOSICK FALLS, N. Y.



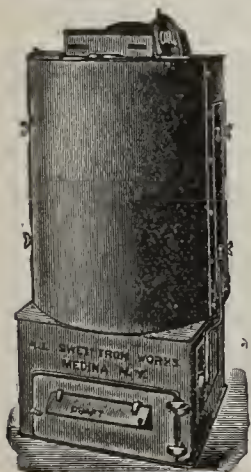
## Portable OVENS

FOR  
CORE BAKING,  
JAPANNING,  
ENAMELLING, Etc  
Bakers, Confectioners, Hotels, Etc.

Made in all sizes, single and double, for coal, wood,  
natural or artificial gas.

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The G. S. BLODGETT CO., Burlington, Vt., U. S. A.



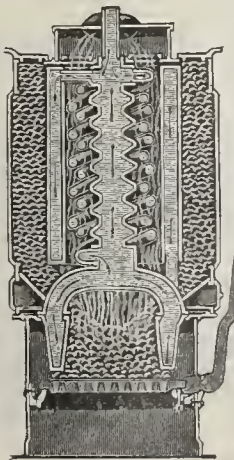
## ROBBIN HOT WATER HEATER.

For heating dwellings and other  
buildings; also for greenhouse heating.

**SAVES FUEL,**  
and is a success in every way.

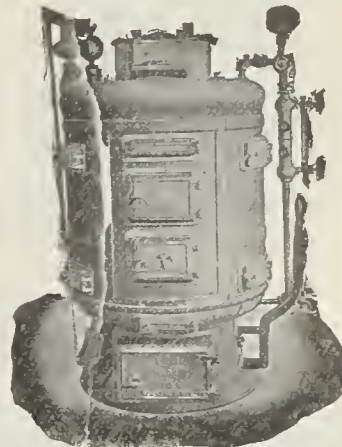
Send for catalogue.

A. L. Swett Iron Works,  
MEDINA, N. Y.



## Pierce BOILERS and RADIATORS

for Steam and Water Heating.



Pierce Improved Florida Steam Boiler.  
LARGE HEATING CAPACITY.  
ECONOMIC IN FUEL CONSUMPTION.

Endorsed by the foremost Architects  
and Heating Engineers.

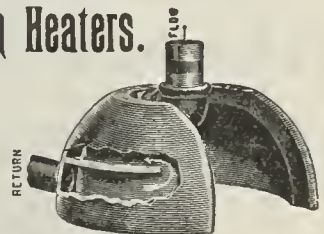
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Pierce, Butler & Pierce Mfg. Co.,  
Syracuse, N. Y.  
New York. Boston. Philadelphia.

## The Champion Hot Water Combination Heaters.

They Fit Any  
Furnace.

Base section when  
used without ring  
sections



Ring Section

These Heaters are made in five sizes diameter, and  
from 100 to 700 square feet radiation capacity.  
Will heat those cold rooms or an addition to the build-  
ing. Will increase the capacity of any furnace. Are  
cheaper than coils and will do more work.

Write for new circular. Manufactured by

FRANK D. STOLZ,  
115 Lake St., Chicago, Ill.

## The "ABC" VOLUME BLOWERS and EXHAUSTERS.

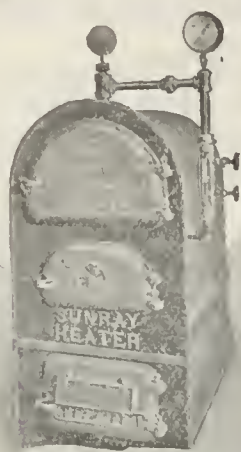
It's really hard  
to find language  
to tell the whole  
story in forceful  
manner and few  
words.

So let us send  
our Illustrated  
Catalog.



AMERICAN BLOWER CO.  
DETROIT, MICH.  
NEW YORK CHICAGO LONDON.





Series 50.

## MOTT'S "SUNRAY" HEATERS

are built on scientific principles—the product of American industry. Have the rare combination of safety, economy and durability. Write to-day for illustrated catalogue and discount sheet.

Agents wanted. We will grant agencies to established firms if territory is uncovered. Liberal inducements to right parties.

**The J. L. Mott Iron Works,**  
(Heating Dept.)

84-90 Beekman St., New York, N. Y.



What can be done once can be done again. The "WINCHESTER" heater has heated not one, but thousands of dwellings, to the entire satisfaction of owners, and can heat as well just as many more. We invite correspondence from the fitter who wants a good article. Smith & Thayer Company, Boston, Mass., 105 Beekman Street, New York.

## WINCHESTER

## HEATER.



## The Helios-Upton Co.'s

First on the Market. 150,000 Sold.



430 FLAT BACK.

3 inches in diameter.

## STANDARD Oven Indicator

has a dial graduated in the simplest possible manner, as can be seen. This graduation was adopted because every oven has its own peculiarities, and an indicator adjusted to one oven might be incorrect for another. The *Standard* can be adjusted to any oven and has no complicated parts. Made in 3 styles.

Send for circular.

## HELIOS-UPTON COMPANY,

HENRY GLEASON, Agent, 258 Broadway, N. Y.

Peabody, Mass., U. S. A.

All Kinds of Special Instruments and Appliances Manufactured by Contract.

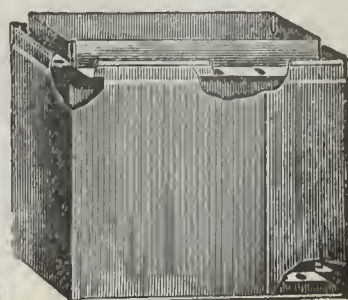
## BURTON'S Fuel Economizer

Attached to stove pipe, saves more fuel and radiates more heat than any other device....

NO TROUBLESOME TUBES.

**W. J. BURTON & CO., Mfrs.**  
Detroit, Mich.

## Chicago Furnace Supply Co.



Write for illustrated catalogue.

62-64-66 W. Monroe Street,  
113-15-17-19-21-23 So. Clinton Street,  
CHICAGO, ILL.

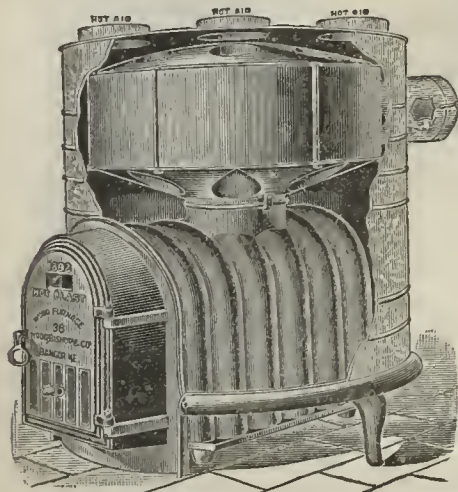
MANUFACTURERS OF

**Furnace Pipe, Elbows, Fittings  
and Supplies.**

We are a New Firm with New Goods and  
New Prices.



## WOOD FURNACES



THE HOT BLAST.

Made With SINGLE PIECE Fire Box Body—

a practically indestructible casting, heavily corrugated to stand the strain.

HAVING IMMENSE AREA OF RADIATING SURFACE—

all directly exposed to the heat of the fire, giving great heating capacity even when fire is low.

MADE IN A WOOD SECTION,

where wood is burned practically—not theoretically.

Our IMPROVED MONITOR,

2 sizes, PORTABLE OR BRICK SET

Our Low Priced HOT BLAST,

3 sizes, PORTABLE OR BRICK SET.

Thousands in use in all sections of the country.

Send now for illustrated booklet giving full particulars and testimonials.

Wood & Bishop Co., Established 1839. 329 Main St., Bangor, Maine.



## MONCRIEF FURNACES

PORTABLE  
and BRICK SET.

*Unequalled in the Great  
Essentials---Simplicity,  
Durability, Economy,  
Capacity, Comfort,*

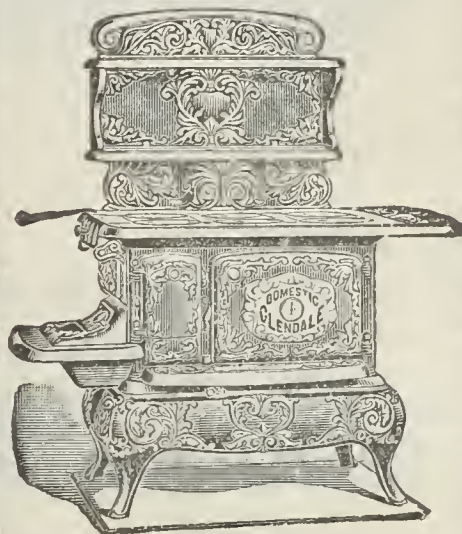
**NO BETTER MADE.**

Write for catalogue. Special price to the trade.

MANUFACTURED BY

**The MONCRIEF FURNACE &  
FOUNDRY COMPANY, ATLANTA, GA.**

## GLENDALE Stoves and Ranges



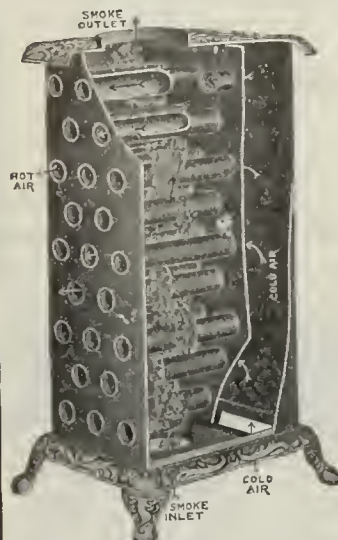
Manufactured by

**SOMERSET STOVE FOUNDRY CO.,**

Send for Sample.

**SOMERSET, MASS.**

## INDEPENDENT STOVE PIPE RADIATORS.



Don't buy Radiators without learning about the Independent for 1902.

**Independent Register Co.,  
CLEVELAND, O.**

## Common Sense Circulator and Radiator.

(Patent applied for.)

This Heater is so simple that its superiority over all others is plain. Being open at each end the cold air is taken in at the bottom, passing out at the top heated; producing a circulation unequalled by any radiator. Is easily cleaned or repaired. Takes the place of a joint of pipe. Diameter of casings, 10½ and 12½ inches. Send for prices.



**A. C. SELLECK,**

**755-757 W. Madison St., CHICAGO, ILL.**

— NEW WIFE: "I wish to get some butter, please."

Dealer: "Roll butter, ma'am?"

New Wife: "No! We wish to eat it on biscuits."—*Chicago News.*

## Champion<sup>nd</sup> Marquart

### Double Flue Ranges.

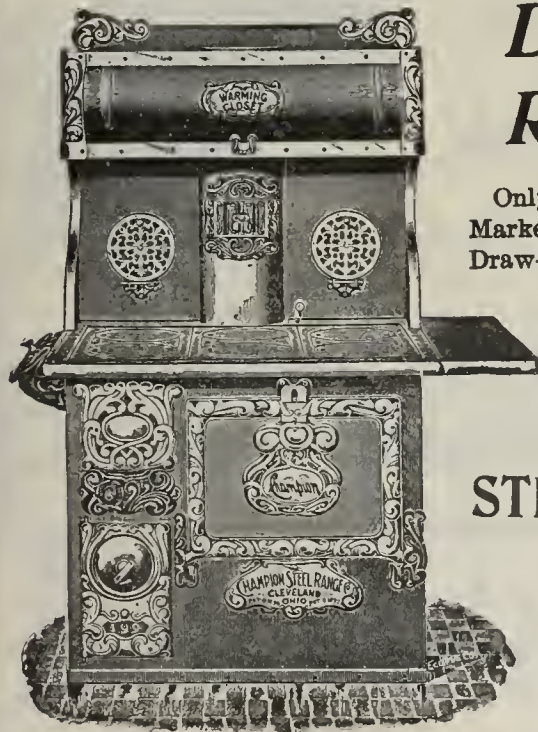
Only Double Flue Ranges in the Market. The Greatest Fuel Saver. Draw-Out Grate.

Handsomely Finished Throughout. Prices Within Reach of all.

**CHAMPION  
STEEL RANGE CO.,  
CLEVELAND, O.**

We are represented by the following houses:

Lee-Glass-Andresen Hdw. Co., Omaha, Neb.  
James Graham & Son, San Francisco, Cal.  
Richards & Conover Hdw. Co., Kansas City.  
Michigan Distributing Co., Lansing, Mich.  
Chicago Stove and Range Co., Chicago, Ill.  
Jacob Retterer, Chicago, Ill.  
Corbett, Failing and Robertson, Portland, Ore.  
Palmer Hdw. Co., Savannah, Ga.



J. M. Litchfield, New York, N. Y.  
Kettlesen & Degetan, Chihuahua, Mex.  
Moore-Bandley Hdw. Co., Birmingham, Ala.





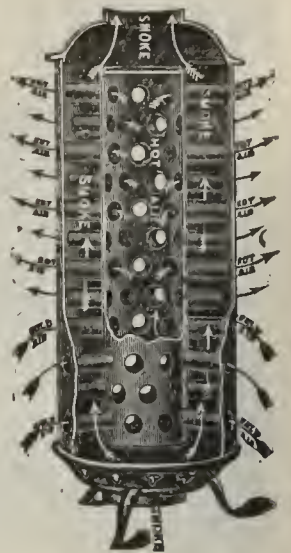
I can hold my hand over my chimney. No waste heat. I use a Rochester Radiator and save half the fuel.

The greatest leak in household economy is the loss of heat up the chimney. This was supposed to be unavoidable until the **Rochester Radiator** was invented; now it is cheaply and thoroughly controlled by the many cross tubes. Dealers find an ever growing trade. Why not put in a stock and get up a boom in your town?

## Rochester Radiator Co.,

100 FURNACE STREET,

ROCHESTER, N. Y.



4866 sq. ins.

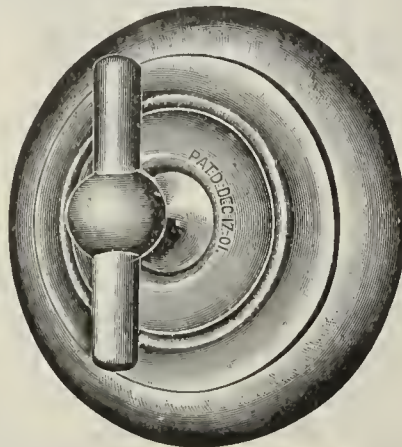
**SOMETHING  
NEW ....**

### Sheet Steel Draft Registers with Screws Complete.

PATENTED DEC. 17, 1901

Threads are cut and disk is securely fastened  
*Without cotter pins or washers,*  
Yet it is loose or tight as wanted.

SEND FOR PRICES.



#### STOCK SIZES.

|        |        |
|--------|--------|
| 2½ in. | 4 in.  |
| 3 in.  | 4½ in. |
| 3¼ in. | 4¾ in. |
| 3½ in. | 5¼ in. |
| 3¾ in. |        |

Any size made to order in quantities.

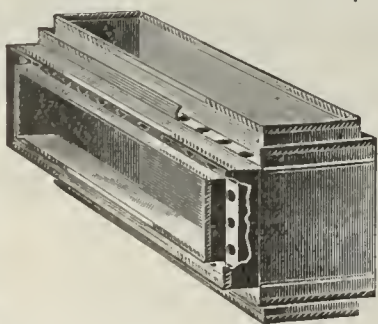
Manufactured by

The H. A. MATTHEWS MFG. CO., Seymour, Conn., U. S. A.

**FURNACES**

**EXCELSIOR HEATING  
SPECIALTIES**

**PIPE**



Excelsior

FURNACE PIPE,  
HOT AIR REGISTERS,  
STOVE PIPE ELBOWS,

ARE ALL SELLING AT

**MUCH BELOW**

their real value.

This is also true of many other things which we make, as our Quotation Sheet will demonstrate.



EXCELSIOR IDEAL  
ELBOW

**ELBOWS**

**EXCELSIOR STEEL FURNACE CO.**  
38-40 W. MONROE ST.-CHICAGO.

**REGISTERS**

REFRIGERATORS,  
BLUE FLAME OIL STOVES,  
GASOLINE STOVES.

LARGEST JOBBERS  
in  
NEW ENGLAND.

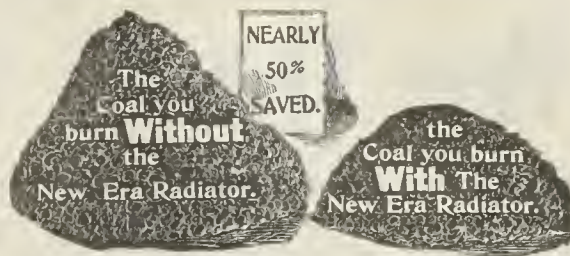
GAS RANGES,  
FURNACES, STOVES,  
RANGES AND REPAIRS.

**HENRY N. CLARK CO.,** 56 and 58 UNION ST., **Boston, Mass.**





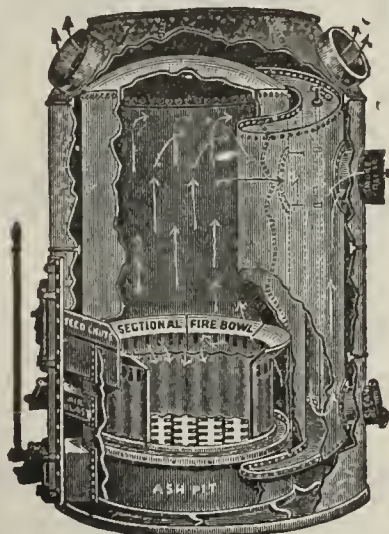
## THE MINERS' STRIKE



will make coal exceptionally high the coming season. Be prepared to tell your customers how they can utilize one ton of coal so that it will give the heat they have heretofore secured from two tons by the use of a **NEW ERA RADIATOR**. Send for our inducements to handle these Radiators now.

**WILMOT CASTLE & CO., 76 Elm Street, Rochester, N. Y.**

## The Torrid Zone Furnace



is a trade winner because it has points of merit peculiar to itself that can be found in no other steel furnace. Our new catalogue is now ready to mail and a description of our Hot Air and Hot Water Combination Furnace can be seen in it. We furnish either the cast iron lining or the fire brick at the same price. Our Wood Furnace is called a powerful heater by those who use it.

CATALOGUE FREE.

**Lennox Manufacturing Company,**

Elighth Ave. and Frederick St.,  
MARSHALLTOWN, IOWA.

**H. & C.**

Wrought  
Steel

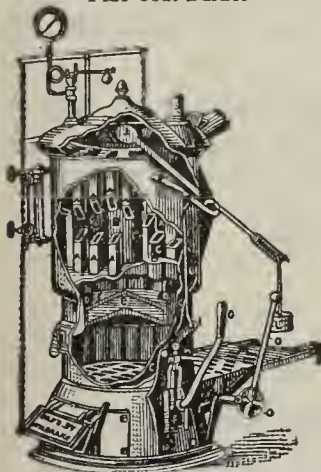
**REGISTERS**

...and...

**VENTILATORS.**

**STRONG, LIGHT,  
HANDSOME in SIM-  
PLICITY of DESIGN.**

Sectional View of the  
**TORRID**  
Fine Coal Burner



For Steam or Hot Water Heating

This boiler is made on an entirely new principle and is

**The Only Boiler**

that will burn Pea or Buckwheat Coal successfully.

**SAVES TIME. SAVES MONEY  
RESULTS UNEQUALED.**

MADE BY

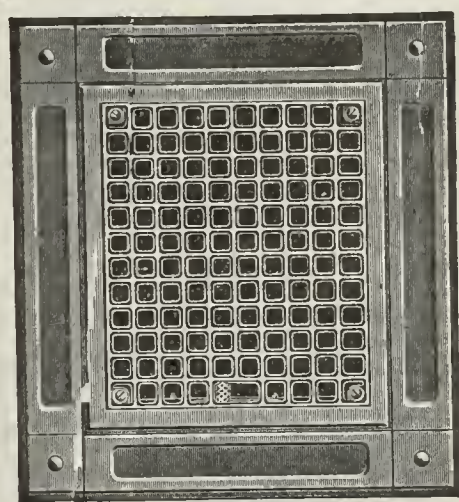
**W. H. DRAKE.** 36 Clinton St.,  
NEWARK, N.J.

MANUFACTURER OF

**The TORRID Steam and Hot Water Boilers**  
for burning either anthracite or bituminous coal.

Factory, Hackettstown, N. J.

Send for catalogue.



**FURNISHED WITH  
WROUGHT STEEL  
or WROUGHT BRASS  
FACE PLATES, AND  
IN ALL FINISHES.**

Manufactured by

**The HART & COOLEY CO.,**  
New Britain, Conn.

GENERAL SALES AGENTS,

**STANLEY WORKS,**  
New Britain, Conn.

79 Chambers St., New York.  
19 Lake St., Chicago.

# The Household Furnace

"Healthy Heat and Plenty Of It."

with its brick-lined firepot, patent auxiliary radiator and many other special features will heat the coldest house with smallest expense for fuel. Write for catalogue to

**The White Warner Co.**  
Taunton, Mass.



# We Don't Make Furnaces

but we supply 75% of the furnace manufacturers with **COLEBROOK'S** Asbestos Furnace Cement. How is it with you? Are you using **COLEBROOK'S** Asbestos Furnace Cement and **INDESTRUCTIBLE** Stove Putty? Gets as hard as iron and no heat can destroy it. Why not have the best? Poor cement is not cheap at any price and **COLEBROOK'S** is as cheap as the cheapest. Put up in all size removable cover cans, tubs, barrels and half-barrels. Samples and prices for the asking. Manufactured only by

**W. H. COLEBROOK, SONS & CO.**

SYRACUSE, N. Y., U. S. A.

P. S.—Largest makers of Asbestos Furnace Cement in the world. A strong statement but conscientiously made.



## BLACK KID STOVE POLISH

AND DON'T PAY FOR IT IF NOT  
THE BEST YOU EVER USED.

**FIVE POUND CANS—65 Cents EACH**

TRY IT IF YOU WANT SOMETHING EXTRA FINE  
FOR YOUR SAMPLE STOVES.

NICKEL PLATE STOVE POLISH CO., Mfrs.,  
CHICAGO, ILLINOIS.

## STOVE REPAIRS

If you order from us and save 200 Premium Shipping Tags we will give you, free, a one thousand mile book on any railroad.

We Carry in Stock Repairs for 20,000 Different Kinds of Stoves, Heaters and Ranges.

Cut this ad. out and return it with your inquiry or order and receive 3 premium tags free.

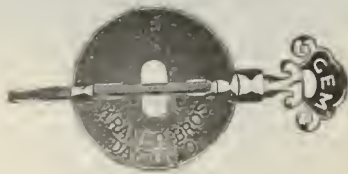
CHAS. C. HEATH & CO., 136 and 138 N. Second St., Philadelphia, Pa., and Baltimore, Md.

Sales Agency for  
ALUMINUM and ELEC-  
TRIC OIL HEATERS.

Best on Earth.

### STOVE PIPE DAMPERS

Fine Nickel Plated Handle.



Sharp Pointed Spindle.

Manufactured by  
KRAMER BROS., Dayton, Ohio.



### THE "BEST" LIGHT

is a portable, 100 candle power light, costing only 2cts per week. Makes and burns its own gas. Brighter than electricity or acetylene, and cheaper than kerosene. No Dirt. No Grease. No Odor. Over 100 styles. Lighted instantly with a match. Every lamp warranted.

Agents Wanted Everywhere.

THE BEST LIGHT CO.,  
207 E. 5th St., Canton, Ohio.

—THE STEPMOTHER.—Victor: "How is your new mamma, Bobby?"  
Bobby: "She does very well for an amateur."—Smart Set.

## Stove Dealers

will make money and save money by using

### Dixon's Graphite Cement.

There is nothing equal to it for repairing fire brick in stoves, furnaces, etc. Let us send you sample and prices.

JOSEPH DIXON CRUCIBLE CO., - JERSEY CITY, N. J.

## STOVE POKERS and LIFTERS.



"Siberian" Poker.

Either bent or straight  
ends; length, 20 in.

Arcade Plain Cast Lifter.

No. 3. Light pattern, coppered.  
No. 4. Heavy pattern, coppered.

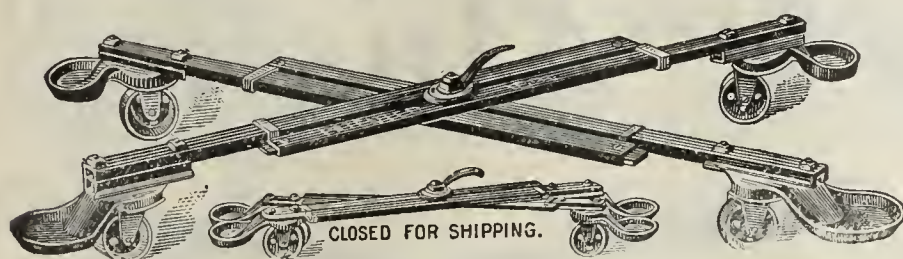
Manufacturers of HARDWARE SPECIALTIES.

WRITE US FOR PRICES.

ARCADE MANUFACTURING CO., - FREEPORT, ILL.



## The Model Stove Truck is out of sight when under a stove.



Is all steel, has only one adjustment, is practically indestructible.

We offer to take back and refund money if, after a month's trial, the Model is not satisfactory.

SEND FOR CIRCULAR AND PRICE.

The S. M. HOWES COMPANY,  
BOSTON - - - MASS.

## The YANKEE Hot Air DAMPER (IMPROVED.)

HOT AIR.

THE YANKEE EXCELS.

SMOKE PIPE.



Above All—Cheapness—a dealer cannot possibly make dampers as cheaply as we sell the Yankee. Easily put in and taken out of pipes. Stiffest, quickest-working and neatest damper on the market.



It is impossible for this rod when in position to move either way.

ROD POINTS: Has wood enameled handle. Wood handle cannot come off. Washer and spring cannot fall off the rod. Same size of holes are punched on each side of pipe. Rod is made of 1/4 in. cold-rolled steel and slips into damper very smoothly. Sample sent to any Dealer without charge.



The S. M. HOWES CO., Manufacturers, 40-46 Union St., Boston, Mass.

# MICA

ASSORTED PACKAGES.

Put up expressly  
for the Retail Trade.

ONE POUND—4 SIZES.

1/4 lb. each size.

|                           |        |               |           |
|---------------------------|--------|---------------|-----------|
| North Carolina, . . . . . | \$2.00 | 4 1/2 x 6     | 2 1/2 x 3 |
| Wyoming, . . . . .        | 1.70   | 2 3/4 x 3 1/4 | 2 x 5     |

TWO POUND—8 SIZES.

1/4 lb. each size.

|                           |        |           |               |
|---------------------------|--------|-----------|---------------|
| North Carolina, . . . . . | \$3.80 | 2 x 3     | 2 3/4 x 3 1/2 |
| Wyoming, . . . . .        | 3.25   | 2 x 4     | 2 1/2 x 3     |
|                           |        | 3 x 3     | 2 1/2 x 5     |
|                           |        | 3 x 4 1/2 | 4 1/2 x 6 1/2 |

THREE POUND—12 SIZES.

1/4 lb. each size.

|                           |        |               |               |
|---------------------------|--------|---------------|---------------|
| North Carolina, . . . . . | \$5.25 | 4 1/2 x 5     | 2 3/4 x 4     |
| Wyoming, . . . . .        | 4.25   | 2 3/4 x 4 1/2 | 2 x 4         |
|                           |        | 3 x 3         | 2 3/4 x 2 3/4 |
|                           |        | 2 1/2 x 3     | 5 x 6 1/2     |
|                           |        | 2 x 3         | 2 1/2 x 5     |
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Above Prices Net. No discount.

EUGENE MUNSELL & CO.,

NEW YORK.

CHICAGO.

# MICA

Specially Prepared for the  
Stove Trade.

OHIO MICA CO., CANTON, OHIO.

FOR **MICA**

Sheet, cut or uncut, Powdered and Flake

WRITE TO

ASHEVILLE MICA CO.,

ASHEVILLE, N. C.



DO you want  
Stoves and  
Heaters that are  
easily sold and

**STAY SOLD?** We have  
been very successful in de-  
signing patterns for such.

THE GOBEILLE PATTERN CO.,  
CLEVELAND, OHIO.

## PATTERNS

FOR STOVES AND HEATERS.

First-class in wood and iron.

Vodder Pattern Works. - Troy, N. Y.

THE GEORGE W. COPE  
Stove Pattern Works.

ORIGINAL, ARTISTIC AND  
PRACTICAL CONSTRUCTION.

Cor. Randolph and Atwater Sts.,  
DETROIT. - - MICH.

**SHINES FOR ALL**

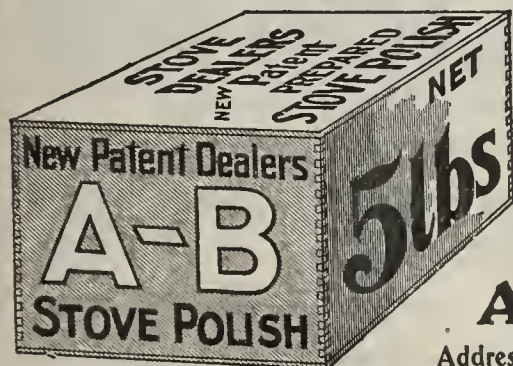
It is the polishers' friend, and  
will polish anything.  
Write for free sample  
to

297 E. Wash-  
ington St.,  
Ind'p'l's,  
Ind.



GEO. W. HOFFMAN.

## SAMPLES SENT FREE!



To Stove Dealers and  
Manufacturers

This new patented prepared powdered stove  
polish mixes quick, shines easy, black, brilliant  
and is waterproof. No rust or dust. Cheapest  
and best polish ever invented. Keeps any  
length of time in any climate. You make your  
own paste at once. Investigate for full trade.  
It will pay you. Write us for prices. Paste or  
Dry Stove Polish, 5-lb. can, boxes or bulk.

**Ayling Brothers**

Address Dept. B., 8-14 Haddon Ave., Chicago, Ill.

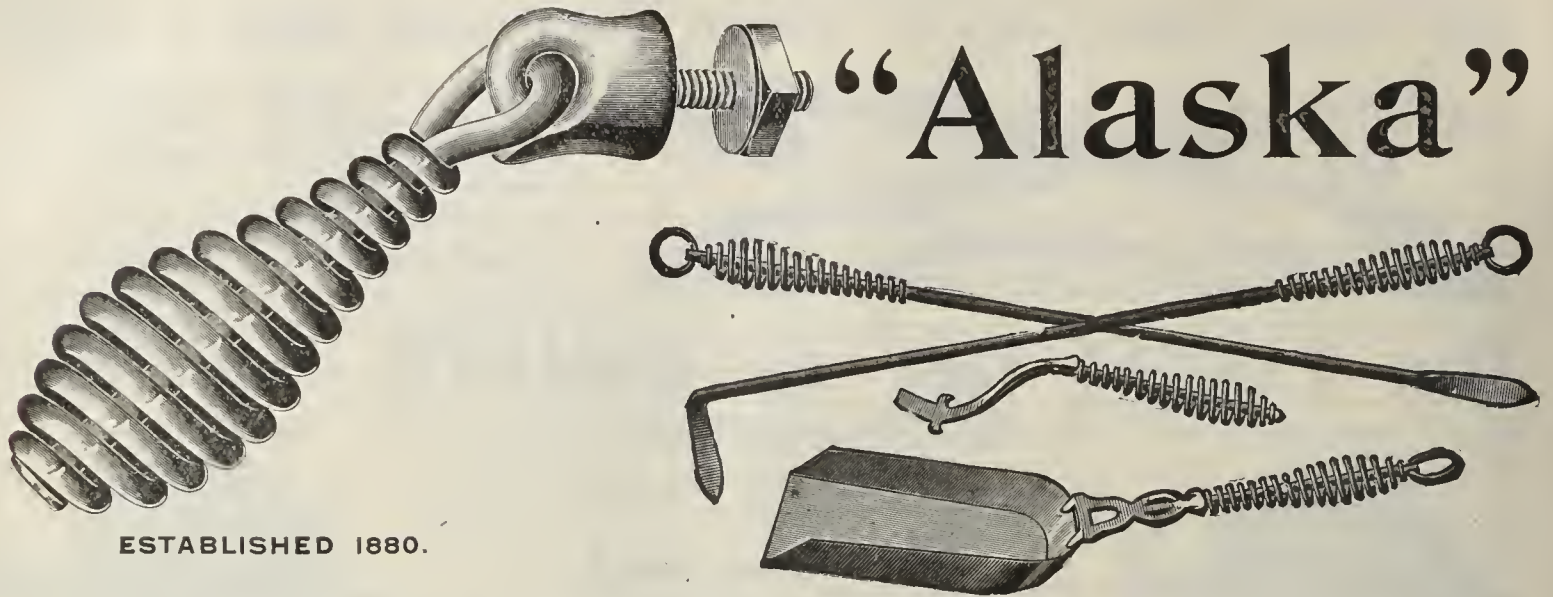
HIGH GRADE  
PORCELAIN  
ENAMELING

in all colors; Stamped Steel Kitchen Sinks,  
Steel Refrigerator Linings, Lamp Shades and  
Tops a specialty. As our enamel is very hard  
and tough they are well adapted for Gas and other  
Stoves.

Estimates furnished upon receipt of sample and particulars.

JOHN PEIL ENAMELING WORKS, - Columbus, Ohio.





# Troy Nickel Works,

ALBANY, NEW YORK.

All The Latest Novelties in Stove Trimmings.

## ALWAYS COLD.

### Each Succeeding Season



brings a gratifying gain in our sales. In view of this fact we are content at knowing that the Rutland gives satisfaction and the satisfied customer comes again. We have the utmost confidence in our goods and so has the dealer after his first purchase. Try us for an order.

### RUTLAND FIRE CLAY CO.,

60 Wabash Ave.,  
CHICAGO, ILL.  
NORTH EAST, MD.

Rutland, Vt.



## "O. H." ONE PIECE STOVE PIPE Elbows

Perfectly round and true to size. With long ends, DOUBLE LOCK SEAM in throat or under side of Elbow.

Handsomest, Heaviest and Strongest Stove Pipe Elbow Manufactured.

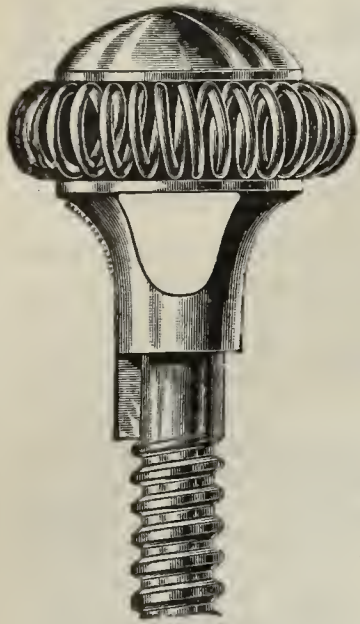
—SOLE MANUFACTURERS—

THE LAWRENCE-LETT'S ELBOW CO., Ltd., - - - Waverly, N. Y.

## WILLIAMS STOVE LINING CO.

Eagle Clay. Gas Fuel. Stove Bricks.  
TAUNTON, MASS.





No. 346 Draft Register.  
No. 520 ZERO Screw  
Knob.

MANUFACTURED BY

**W. H. SHIELDS & CO.,**

Successors to W. F. GREENE.

TROY, - - N. Y.



**MARCY STOVE REPAIR CO.,**

MANUFACTURERS OF

**RANGE, STOVE AND HEATER REPAIRS  
AND FIRE-BRICK LININGS,**

74 Beekman Street, New York,

FOUNDRIY,  
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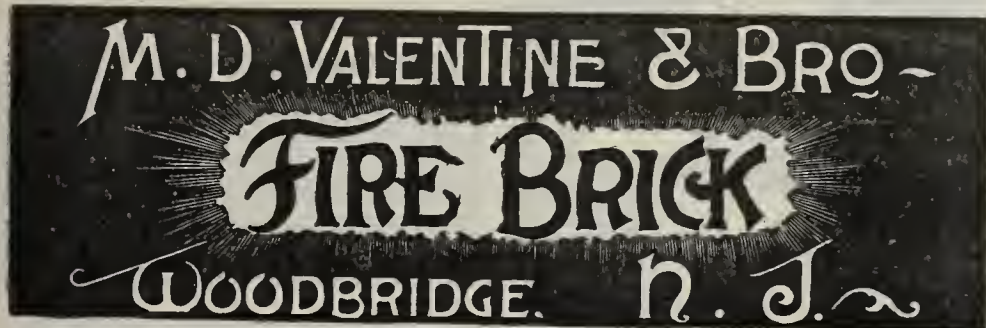
FIRE-BRICK FACTORY,  
36 to 46 South Fourth Street, Brooklyn, L. I.

BRANCH STORES:

South Fourth Street, Brooklyn, L. I. 362 Grove Street, Jersey City, N. J.

**Fire Brick Linings.**

**PRESBREY STOVE LINING CO.,**  
TAUNTON, MASS.



**WATER FRONTS.**

Try us, we have the Stock.

Our price is right.

Write for Catalogue.

**H. E. HESSLER CO.,**  
SYRACUSE, N. Y.

HANDLE THE BEST.

**CHAMPION STOVE  
CLAY**

Is the only brand made of  
crucible materials, viz.: Im-  
ported German Fire Clay and  
Plumbago from Ceylon.



Dealers are invited to send  
for circulars.

Packed in neat, attractive,  
round pasteboard boxes of  
three sizes—large, medium  
and small, holding about 10  
lbs., 6 lbs. and 2½ lbs., re-  
spectively.

**ALSO SOLD IN BULK.**

Your jobber can furnish the  
goods.

**BRIDGEPORT CRUCIBLE CO.**

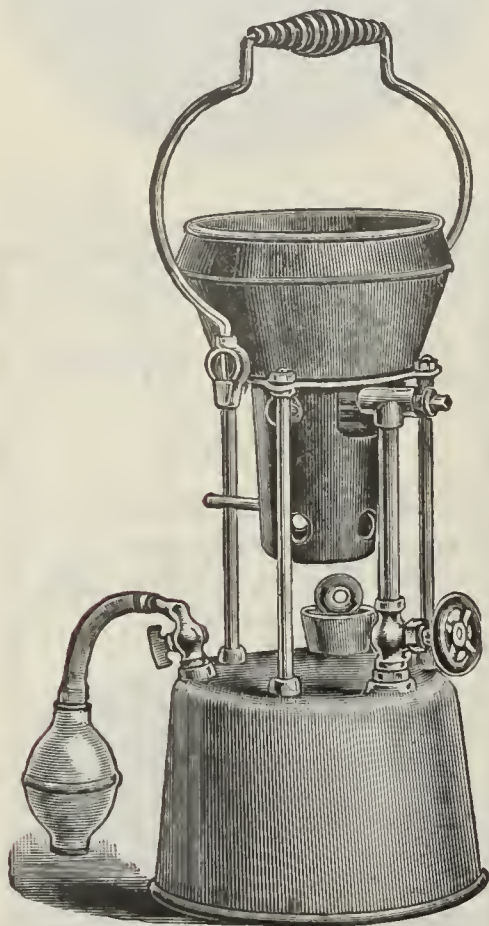
Bridgeport, Conn.



# L. WOLFF MANUFACTURING COMPANY,

General Office,  
93 W. Lake Street, CHICAGO.  
WOLFF'S IMPROVED PLUMBERS' FURNACE.

The "DURO."



THE "DURO" "F" 1241.

PRICES UPON APPLICATION.

Quantity shipments are packed in cases 6 and 12 furnaces each.

## The "DURO" Plumbers' Furnace

Has Drawn Steel Reservoir  
Heavily Galvanized.

Drawn Steel Coll Cup.  
Wrought Steel Bottom.  
Patent Wire Handle.  
Improved Filling Plug.  
Safety Air Cock Joints.  
No Cast-Iron Parts.

It weighs less than any other Furnace now in use.  
In placing on the market

Our Improved Plumbers' Furnace we have fully succeeded in producing *the best furnace made*. Most perfect in every detail. Of the highest efficiency. In operation, positive and reliable. Of substantial construction; combining lightness, strength and durability, at no more cost to the trade than the old style.

All component parts are interchangeable, being accurately made and fitted before shipment.

Illustrated Catalogue and Price-List sent upon application.

## The Milwaukee Pattern Works.

Ornamental and Stove Patterns.

Sketches and Designs for Stove Work of all kinds.

Correspondence Solicited.

15-507 Cedar Street,

MILWAUKEE, WIS.



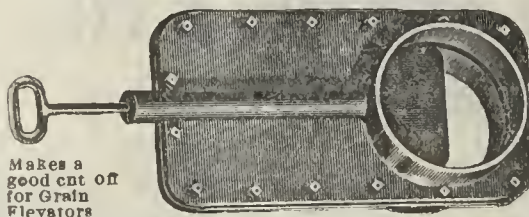
# The CHEAPEST AUTOMATIC STEAM AIR VALVE OF ITS KIND ON THE MARKET.

We are the largest makers of Air Valves in the world and sell direct to the dealers. Write at once for circulars and discounts.

## Monash-Younger Co.

215 So. Canal Street

CHICAGO



Makes a good cut off for Grain Elevators

## IMPROVED WIND-GATE

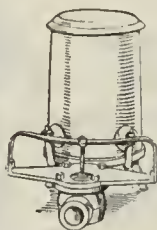
SEND FOR PRICE-LIST AND DISCOUNT TO  
MINER & PECK MFG. CO.  
NEW HAVEN CONN.

## LEATHER and RUBBER WASHERS,

Machine cut, at less price than can be cut by hand. Send Sample for prices.

I. G. MARSTON & CO.

200 Ruggles St., Boston, Mass.



THE KLINE PAT.  
HYDRAULIC RAM  
is not to be compared with the Ram of the past. Its superior qualities can at once be seen, it being able to deliver water to a greater altitude under similar conditions than any other. Dealers will have a leader in the Kline. Responsible parties wanted everywhere to introduce and handle same. Address for circulars, prices, etc., J. M. KLINE, Mfr., Beavertown, Pa.

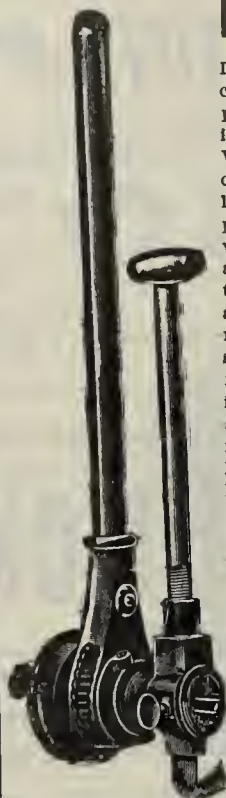


## GALVANIZED STEEL and WOOD TANKS.

All sizes and shapes.

J. H. EDWARDS,  
59 Park Place, N. Y.

## The Climax RATCHET STOCK



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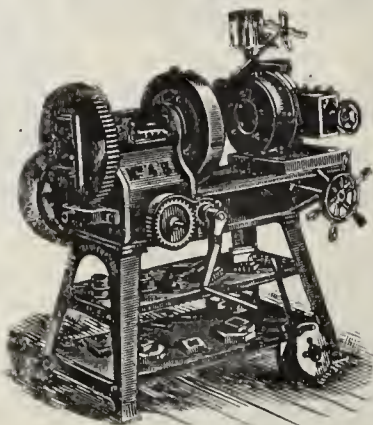
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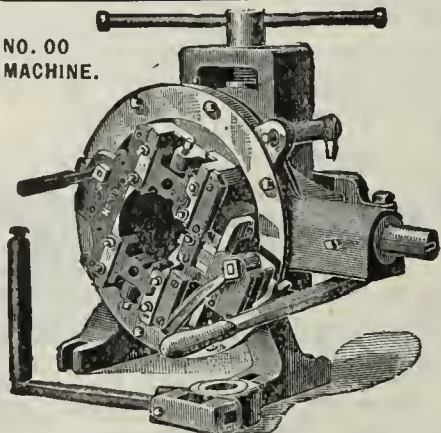
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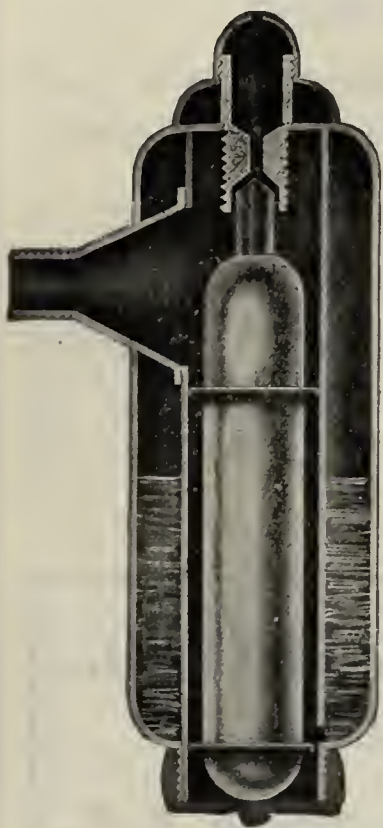


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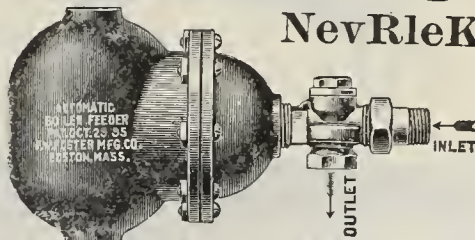
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Volume LVIII.....No. 9  
Index to Reading Matter.....Page 64

## The Losses Through the Anthracite Coal Strike.

From week to week there are published estimates of the cost of the anthracite strike which make a brave showing and look decidedly complete and fair. The loss of wages to the men is figured out, which we suppose may be done pretty closely. We are told how many millions of dollars the coal companies and the railroads lose in profits, which may or may not be wide of the mark. Quite a display of millions is made over the loss of business of local merchants and other incidental matters. Now all these statistics are based on the assumption that every ton of anthracite coal not mined during the strike represents just so much total loss, and this, in the face of the fact, only too well known, that the one serious feature of the anthracite coal mining industry is that the men are employed less than 200 days in the year, and that the capacity for production of the collieries is greatly in excess of the demand. In other words, the strike is causing idleness which would have occurred in any case, and when the mines do start up they can and probably will produce a good deal of the coal on which our statisticians figure such great losses. The anthracite coal industry has had serious losses during the struggle. Every ton of bituminous coal burned by consumers who ordinarily use anthracite is business lost, with the chance that some customers may have been taken away forever. But the great mass of the requirements is simply in suspense, and this is particularly true of the domestic demand, which will not be seriously felt for some time to come. Instead of entering the winter with enormous stocks, as usual, the anthracite trade will have many months of work at maximum pressure, and will have then to fill the yards and storage plants so utterly depleted. The sacrifices which the manufacturing industries, and notably the Eastern iron trade, have been forced to make are serious enough and the anthracite mining industry must suffer keenly, but it is ridiculous to parade the huge figures which the amateur statisticians are putting forward. They absurdly exaggerate the situation and contribute to the feeling, only too prevalent, that a great industry and all those connected with it have been seriously crippled.

## Popularity of Metal Ceilings.

The use of sheet metal for covering ceilings and side walls is rapidly growing throughout the United States. The advantages of stamped metal for interior decoration are so many and the attractive and artistic effects produced by the creations of modern steel ceiling makers

are so striking that the popularity of this material is growing by leaps and bounds. At first metal ceilings and side walls were almost exclusively used in offices, hotels, stores, public halls or business buildings. Of late, however, architects have come to favor the use of sheet metal for interior decoration in private houses, while many modern churches are also making use of this material. The number of manufacturers who turn out this product has increased materially within the last decade, and most of them have been forced to extend their facilities from year to year in order to keep pace with the growing demand for their goods. It is to the credit of the manufacturers in this line that they are educating the public taste by the exceptionally handsome and artistic designs in which they are offering their products. Some of the manufacturers engage the exclusive service of artists to make their designs, much in the same way as do the makers of wall paper, dress goods and upholstery materials. A glance through the recent catalogues of the metal ceiling manufacturers will show what an immense advance in the direction of art has been made by them of late. So important has become this industry that a distinct class of workmen has sprung up under the name of metal ceiling hangers, who are experts in the erection of metal ceilings and side walls, and who are paid a high rate of wages. Most of the metal ceiling manufacturers maintain their own staff of erectors and are accustomed to contract not only to supply the material, but to put it in place in the best possible manner. When in place the metal ceiling further requires the services of the painter and decorator to finish it. This work calls for no small amount of skill and taste in order to bring out the best effects obtainable from the stamped metal designs, and to produce the proper harmony in the color scheme to correspond with the furnishings of the room or hall. A special class of workmen, called metal ceiling painters, are therefore employed by the manufacturers in conjunction with the metal ceiling hangers. Already the foreign markets are beginning to show an interest in American metal ceilings and stamped ware for interior decoration, and an increasing amount of these goods is being exported. In some cases expert American workmen have even been sent abroad to erect the metal ceilings or to teach the foreign workmen how to put them in place in a proper manner. There is no doubt that, in the course of time, American manufacturers will be called upon to supply a large volume of products in this line to foreign buyers. The field would seem to be almost unlimited.

## Sizes of Catalogues.

A persistent demand exists for the standardization of catalogues. This demand comes not only from merchants but from purchasing agents of railroad companies and other large corporations consuming a great variety of goods. They find it exceedingly inconvenient to arrange their catalogues systematically so as to permit ready reference. It is true that a great many catalogues now show some approach to uniformity, as a result of the continued agitation of this question, but there are very many others of motley size. Some are tall and thin. Others are short and very stout. Some are of such small size that they can be conveniently carried in the



pocket. Others are so huge that a dictionary stand is required to handle them conveniently. The variety in size causes great difficulty in the arrangement of a collection of catalogues on shelving or in a bookcase. Some cabinets have been constructed with a special view to holding catalogues, but these are not available for every catalogue that comes to hand. The suggestion is made that manufacturers and jobbers endeavor to conform to what they observe is the most popular size among houses in their particular line. It may not be practicable to have all trade catalogues of precisely the same size. What is advantageous or especially convenient for one line of business may not be strictly appropriate for another line. Nevertheless, taking one particular branch of trade, those engaged in that line can adopt a size suited specially to their requirements. This is an era of standardization, and the principle has been applied to so many things in so many different lines that it is absurd to say that catalogues are an exception. If they were more nearly uniform it is safe to say that many catalogues would be preserved for reference which now speedily find their way to the waste basket, despite their embellishments. It would certainly seem possible to have only three or four sizes instead of the great variety now in use.

### Editorial Notes.

In a recent article in the *Forum* Henry Gannett points out that of all the manufactured goods produced in the world the United States contributes more than one-third, or 34 per cent. Its production of manufactured goods is nearly seven times as great as its proportion of population. Of the other leading industrial nations Great Britain contributes 15 per cent. of the manufactured goods of the world, Germany 12 per cent. and France 11 per cent. These figures suggest the remarkable efficiency of the American artisan, which is borne out by an examination of the figures of production and of competition. Thus it is shown that the average value of manufactured product per hand in the United States is \$1900 per annum, while the French artisan, under the same rule, produces \$650, the English artisan \$485 and the German \$405. In other words, the product per hand of the United States artisan is nearly three times as great as that of his closest competitor.

Metallic construction appears to have had not the least power of resistance during the volcanic eruption at St. Pierre. Not only was it incapable of withstanding the weight of the burning matter, but some chemical action is likely to have taken place which transformed the particles. M. Amadée Knight, a senator of Martinique, was on the island at the time of the disaster, and describes the effects as corresponding with those which might be expected if some colossal Nasmyth's hammer had been employed in operation on the town. Most things have been reduced to a fine powder. One of the cases mentioned is the market of St. Pierre. After the cyclone of 1891 the authorities decided to reconstruct it in the most solid manner. Cast iron was adopted. It is said to have been impossible to find the slightest trace of construction which had an area of 2000 meters square.

W. H. Anderson & Sons, a well-known firm of manufacturers of stone and marble working tools in Detroit, Mich., recently gave a dinner to celebrate the thirtieth anniversary of continued service with them of one of their foremen. Eleven other foremen were also present at the banquet, one of whom had been with the firm for 22 years, two others for 12 years, and another for ten

years. The firm in question evidently recognize the desirability of considerate and kindly treatment of their employees and of a proper recognition of their aid in building up their business. It would foster a better understanding between employers and employees if considerate actions of this kind were more common. One of the first essentials in the successful building up of a manufacturing business is the maintenance of mutually cordial relations between employers and their workmen, and their occasional coming together in a social way would tend more than anything else to stimulate such desirable relations.

### Can Panics Be Prevented?

A highly interesting address was delivered by S. R. Flynn, president of the National Live Stock Bank of Chicago, before the convention of the Minnesota Bankers' Association, in which he discussed the subject "Can Panics be Prevented?" He studies the causes of bank panics and takes the ground that they are not unmixed evils, and says:

I have no intention to ascribe panics to the will of God; yet I may say without hesitation that panics cannot be prevented by human legislation. Legislation cannot remove or even reach the great first cause of all financial and business disasters—overconfidence. All other causes I have given, all other causes that others give, are not causes; they are effects or aggravations. It is the fashion to attribute financial crises and panics to bad banking or bad monetary laws. Bad banking and bad financial laws aggravate crises, intensify panics and prolong periods of depression, but they do not cause panics. I do not intend to go into the causes and history of all the financial troubles of this and other countries. It suffices to say that they invariably follow periods of overconfidence. Whenever there have been great progressive impulses in this country, or in any country, even those countries with banking and currency systems having the high approval of our financiers, there have been sharp reactions. And so it will ever be. In the years of overconfidence prices set a pace too fast for legitimate growth and soon leave development far to the rear. There can be but one result. There comes a time when market prices and actual values must get closer together, and when that time comes the necessary process of readjustment hurts. Then comes the crisis, the panic, the depression—one or the other or all three in the order given. You cannot name a country that has enjoyed any great commercial development that has not had its panics, its crises, its periods of depression. And there never will be such a country, no matter what banking or currency scheme may be in use.

### Trade in the Northwest.

A correspondent sends us the following advices in regard to business in the Northwest, which is evidently of a very satisfactory character:

Business in the Northwest is in an exceedingly prosperous condition—good crops with fair prices—fine cattle and big prices for beef and wool, and even the copper mining is not in as bad a state as many Wall Street folks seem to want the public to believe. There is much new building being done in Minnesota and the Dakotas, and no small amount in the towns of Montana. All this is, of course, making good trade, and in my line there seems to be an increasing demand.

The threatened strike of molders in Cleveland, Ohio, has been averted. Representatives of the National Foundrymen's Association and the Iron Molders' International Union held a conference and reached an understanding which was ratified at a mass meeting of the molders. Under the scale which expired August 1 bench molders received a minimum wage of \$2.65 a day and floor or machinery molders \$2.85. The demands of the men were for a flat advance to \$3.10 all around. Under the new agreement the bench men will be paid \$2.85 and the floor men \$3 a day. The agreement is for one year from August 1. Ten hours will constitute a day's work.



## CONDITION OF THE STOVE TRADE.

The stove trade in the East is enjoying what some characterize as a doubtful blessing. The number of stoves sold this year as compared with last shows a substantial increase, and shipments are now being made to meet the demands which are coming in rapidly from the dealers. This would seem to be cause for rejoicing, but the manufacturers claim that the business is being done without the profit that it should bring. This is more particularly true of cooking stoves, which make up the bulk of the business of the year. The prices on heating stoves are said to be satisfactory, some general advances having been made and independent advances being received by the trade without opposition. Some annoying influences have developed in the Eastern stove trade that have changed their base whenever the opposition to them has become sufficiently strong. It is unfortunate that the whole stove trade is not willing to profit by the experience and to act in concert to prevent these influences from reducing their profits. The larger proportion of the production of a stove foundry is cooking stoves, and when these stoves are sold at so narrow a margin of profit as to be generally spoken of as satisfactory it should not be difficult to secure concerted action that will change the conditions. There are not wanting those who believe that the price of stoves must advance still further owing to the increase in cost without any probability of an early cheapening in pig iron, labor or supplies. With these facts confronting them it would be well for stove manufacturers, particularly those in the East, to revive the old custom of meeting for the purpose of discussing conditions and adopting measures to conserve their interests.

The distribution of stoves from Chicago during the month has been very satisfactory to manufacturers and agents alike. In the aggregate the volume of business has been not only equal to the average of August but most manufacturers have experienced a slight increase. In one instance, at least, transactions have been one-third more in volume than at the corresponding time last year. However, the bright outlook of several weeks ago, which promised unusual activity in the stove trade at this time, pointing to a record breaker in the history of some concerns, owing to the excellent condition of crops throughout the country and the consequent anticipated large rural demand, has been somewhat dimmed by the scarcity and rise in the price of coal, due to the anthracite coal miners' strike. More especially have the ill results of this strike been felt by dealers making a specialty of and doing a large business in base burners and other stoves for heating purposes. But notwithstanding the fact that some large orders have been cancelled for this kind of stoves, general surprise is expressed that matters have not assumed a more serious aspect than they have, and common approval is uttered at the present satisfactory condition of the stove trade. The opinion is prevalent among large dealers that a fair volume of business may be expected during the coming fall and winter. The radiator trade has been active during the past month, and a good fall and winter business is expected, unless the scarcity of building material used in structures requiring such heating apparatus or unlooked for labor troubles should interfere with the present condition of affairs.

### Mott's Caldrons.

Catalogue No. 4, issued by the J. L. Mott Iron Works, 84-90 Beekman street, New York, consisting of 54 pages, is devoted to caldrons. The first article shown is a jacketed steam kettle, which is made with a cast iron body, and a copper kettle furnished with either a tinned or white enameled lining and designed to carry a steam pressure as high as 80 pounds. The kettles are made in a variety of sizes, the largest having a capacity of 3000 gallons. The portable caldron which follows consists of a cast iron furnace with cast iron or tinned copper caldrons. The furnaces are designed to use either coal or wood and the caldrons are made in from 10 to 200 gallons' capacity. White enameled caldrons are also furnished for these furnaces. Furnaces and caldrons

for melting lead and for various purposes are shown in different styles and in capacities varying from 10 to 20 gallons. Large crucible furnaces for melting brass are also shown.

Another line consists of portable wrought iron furnaces, mounted on wheels, for use in melting lead for calking the joints of cast iron pipes used for gas and water mains. Round and square caldrons and tanks coated with white enamel are presented and also wrought iron wagons for hauling varnish kettles, as well as steam tanks and covering plates, heavy fire doors and frames, solid dampers and grate bars, and cast iron flue linings for equipping furnaces for any kind of work. A furnace and pot for melting type metal, made by the company in three sizes having capacities for 250, 500 and 1000 pounds, is designed for using gas as a fuel. The last pages of the catalogue are devoted to large copper caldrons, copper jacketed steam kettles, varnish kettles and kettles for special work.

## NOMINATIONS FOR STOVE CAPTAINS.

In connection with the subject of "stove captains" we are glad to note the generous spirit shown among the members of the trade by the expressions of admiration which have reached us for those men who have achieved a notable success in this branch of industry. We present the following letters, received during the week, nominating other men who are estimated as worthy and capable of filling so important a position. One valued correspondent writes as follows:

Having seen in the last issue of *The Metal Worker* the nominations of some prominent Western men for "Stove Captain," I feel that Ohio has at least one man who is well qualified for a leader and who has already enjoyed the confidence of his *confrères* in a leading position—namely, Lazard Kahn, who has been the president of the National Association of Stove Manufacturers. Mr. Kahn has devoted some time to a study of what would be necessary to make a practical combination among the stove manufacturers and at different times has given interesting information on the subject, which is evidence of the conservative manner in which he would act should he be elected to head so important an enterprise.

Another letter, which is given below, comes from a Pennsylvania manufacturing company who are fully alive to the qualifications of the different men in their State for bringing large enterprises to a successful issue:

It is not uncommon to hear the statement made that Philadelphia is slow; but, unfortunately for the credit of those who make this statement, they fail to add that it is also sure. I make this preface to the nomination I would make for a stove captain. The city of Philadelphia has two men who are amply qualified to plan and carry out all that would be necessary should the stove manufacturers combine. One of these men is Franklin L. Sheppard. He has now had many years of experience in the stove trade, and those who are well acquainted with him know that he is a factor in the management of several other enterprises equally as important as the stove manufacturing business of which he is the head. Another man in Philadelphia has a record of increasing the sale of his productions until large plants have been recently extended and are now needed to supply the demands which come to his house. This man is Abram C. Mott.

In order to meet the rapidly increasing demands of their Stove Repair business, Green & Sons of Des Moines, Iowa, have found it necessary to add to their warehouse facilities. Extensive improvements have been made during the past year, but these have not been sufficient to keep up with the growing volume of their trade. The concern already have patterns for over 50,000 Stoves from which Repairs are made, and this number is constantly being increased.



### White's Stoves, Ranges and Heaters.

The fortieth annual catalogue and price-list of the Thomas White Stove Company, Fifth and York streets, Quincy, Ill., is a neatly printed volume of 112 pages, profusely illustrated and bound in flexible board covers, with gilt side title, the design consisting of a *fac-simile* of the company's trade-mark. In the arrangement of the matter steel ranges are first considered, the leading place being occupied by White's Maxim, a six-hole construction designed for using coal or wood as a fuel. It is fitted with Duplex grate, cast back flue, spring balanced oven door, sheet iron shield below the steel bottom to equalize the heat in the oven, pouch feed for coal, planished steel body lined with asbestos and steel and white enameled reservoir. Following this is White's Model steel range, also intended for using coal or wood and offered in a great variety of styles and sizes. Under the same name is presented an extensive assortment of steel cook stoves, all embodying features which cannot fail to command the attention of an intelligent trade.

Other lines of goods which the company have brought out are White's Peerless steel cooks and ranges, intended for using wood only as a fuel. These goods are said to be built strictly as a wood line and to have important advantages in the use of this fuel not to be found in combination patterns. Many varieties of cast goods are shown covering cook stoves and ranges, some being intended for using coal exclusively, while others are intended for burning wood. More than half of the catalogue is taken up with these goods, the remaining portion being devoted to heating stoves, of which White's Royal Princess is presented as a leader. This is a handsome Todd, made in two sizes and having reversible collar and automatic damper. White's Oak for coal and also for wood is shown, together with a varied assortment of air tight, laundry and box stoves. The catalogue concludes with a list of stove hollow ware, miscellaneous goods and a list of stoves not shown in the catalogue for which the company can furnish repairs.

### Gold Coin Stoves and Ranges.

We have received from the Chicago Stove Works, Blue Island avenue and Twenty-second street, Chicago, Ill., a copy of their thirty-first annual catalogue of Gold Coin stoves, ranges and heaters, which are manufactured in extensive variety. The matter consists of 72 pages of letter press, bound in colored paper covers, carrying, in addition to the name and address of the company, a *fac-simile* of the Gold Coin trade-mark. The frontispiece consists of a view of the company's works and among the early pages is a notice to the trade relative to ordering stoves, together with a statement of terms and a *fac-simile* of the warrant or guarantee which the manufacturers give with their goods. The leading place in the catalogue is given to the Domestic Gold Coin polished steel range, made in several series and adapted to meet varying requirements. The goods have stood the test for several years and embody features which render them popular with the trade. The Merit Gold Coin and Active Gold Coin, which are members of this general class, are designed for burning coal and wood and also for using wood exclusively as a fuel. The Gold Coin hotel steel range is made with double ovens and double fire box and has 12 boiler holes in the top surface. Following these goods attention is invited to the National and Champion Gold Coin polished steel cook stoves, the former being intended for burning coal and wood and the latter for using wood only. These are up to date constructions and are offered in a variety of sizes. Under the generic name Gold Coin is shown an extensive assortment of cast ranges and cook stoves embodying the modern improvements and offered in the usual modifications.

Among the heaters the Gold Coin Ventiduct base burner occupies the place of honor. This is offered in a new twentieth century dress and is so constructed that it can be used as a single or double heater, according to requirements. The Ideal Gold Coin Ventiduct base

burner for hard coal is a member of the same general class, while the Marvel Gold Coin is a medium priced base burner embodying all the essential features of the higher class goods. The closing pages of the catalogue are given up to sheet iron surface burners, oak, globe, cannon, cottage parlor, laundry, box and air tight stoves. Reference is also made to the Royal Gold Coin gas range, which has been brought out to meet the demand for a first-class construction at a moderate price.

### The Reineke, Wilson Company's Gas Stove Catalogue.

A very handsome catalogue, consisting of 68 pages, has just been issued by the Reineke, Wilson Company, Pittsburgh, Pa., illustrating the gas heating appliances made for the company by their manufacturing department operated at Johnstown, Pa., under the name of the Century Stove & Mfg. Company. This catalogue is No. 31. The contents comprise illustrations and descriptions of a great variety of gas stoves and of appliances to be used in connection with such stoves. The company call special attention to several new lines of heating stoves which they have brought out for this season, but more particularly the Franklin, Century and Orient, which are alluded to as goods of the highest merit, which they believe will meet with a ready sale. The Century line consists of reflector stoves, asbestos stoves and fuel stoves, the last named having the appearance of a coal fire and fire place heaters. The Orient stove is a construction strongly suggestive of a coal or wood stove, having a full square cast iron and sheet metal body, with a large mica door and an ornamental stamped steel top. The Franklin line comprises an asbestos open front and portable gas grates, consisting of a fire box surrounded by a frame.

Other stoves shown are the Keystone, with an asbestos fire back; the Mystic, which combines the important features of the atmospheric or blue flame burner with a reflecting surface; the Keystone Reflex, which has a planished copper sloping reflector; the Crescent, which has an asbestos flame plate and burns with a blue flame; the Iron City, which is a natural gas base burner; the Sunbeam copper reflector stoves; the Senate, which has an asbestos flame plate; the Bonnie, Star and Don cylinder stoves; the Majestic gas radiators; the Omega gas stove, which consists essentially of a special Bunsen burner inclosed in a cast iron dome; the Royal Queen, Empress, Corona, Regina, Crown and Regent fire place heaters, and the Keystone gas log fire. The catalogue further presents the Keystone gas furnace, which is designed for heating dwellings, stores and churches with warm air, and the Midget hall heater, which is a smaller warm air furnace. The appliances illustrated consist of gas logs, andirons, air moisteners, iron fronts, portable baskets, grate fillings for gas fires, natural gas burners, cook stove gas burners, furnace and boiler burners, wire guards, fire screens, stove pipe, &c. Illustrations are given of the company's Pittsburgh warehouse and of the factory at Johnstown.

### The History of Doe-Wah-Jack.

We trust the readers of *The Metal Worker* are following from week to week the history of Doe-Wah-Jack given in the advertisement of the Estate of P. D. Beckwith, Dowagiac, Mich. For many weeks an installment of the history has appeared in this advertisement. Undoubtedly our readers have been deeply interested in Doe-Wah-Jack and have been desirous of knowing something about this remarkable Indian. The Estate of P. D. Beckwith, therefore, undertook to meet this desire and engaged the services of a competent historian as well as most capable artists, and they have together evolved an exceedingly interesting biography. It is a question whether any other Indian ever secured so much attention and had his history so minutely portrayed as the redoubtable Doe-Wah-Jack, who now gives the luster of his name and achievements to spreading the glory of Round Oak stoves, ranges and furnaces.



### Some Hints About Advertising.

We have received from Jos. Leon Gobeille, president of the Gobeille Pattern Company, Cleveland, Ohio, a most interesting brochure of eight pages in an attractive paper cover, which is entitled "Some Hints About Advertising." This little publication is of a most suggestive character. It will undoubtedly stir up many of those who receive it to renewed efforts in advertising their business. Allusion is made to various methods of advertising, the trade paper coming in for its share of commendation. Stove manufacturers will be interested in the statement that probably the best advertiser ever known to the stove trade was Frederick W. Gardner. We quote from the circular: "Stove men knew what he had to sell and they wept as 'Fred.' made the universe believe that his brand was the only simon-pure blown-in-the-bottle sort in existence." An interesting letter to the Gobeille Pattern Company is reproduced verbatim. Our facilities in this office are not adequate to its reproduction, so we refrain. The concluding paragraph of the brochure is as follows: "The stove business is in general very inadequately advertised. Fred. Gardner, Fred. E. Lee and W. N. Moore have given examples of what may be accomplished by judicious advertising, and, in my opinion, any one of about 50 concerns could easily come to the top place by following their methods. This circular is *not* an advertisement."

### An Important Stove Suit.

At Pittsburgh this week the Pittsburgh Stove & Range Company filed a bill in equity against the Pennsylvania Stove Company, Lyman W. DeHaven, Addison C. DeHaven and John C. Roe, asking that the defendants be restrained from the manufacture and sale of stoves, ranges, furnaces, heating appliances and kindred manufactures for a period of five years, dating from September 1, 1899. It is alleged that on September 8, 1899, DeHaven & Co., Limited, made to the plaintiff a bill of sale whereby they sold to the plaintiff all the personal property of the company wheresoever situated, including the good will, cash, book accounts, &c. It is set forth that as a part of the agreement entered into by the contracting parties the defendants were not to engage directly or indirectly in the manufacture of stoves, ranges, &c., in Pennsylvania, Ohio and West Virginia for five years from the time of the signing of the agreement. The plaintiff avers that the defendants, contrary to this agreement, have erected a plant at Ellwood City, Pa., and are advertising the product as "DeHaven stoves and ranges." A preliminary injunction is asked for and afterward that it be made permanent."

### ODD PLATES.

THE plant of the Alabama Stove Company, Florence, Ala., is being rebuilt.

THE PHILADELPHIA STOVE COMPANY, with principal office at 419 Market street, Camden, N. J., have just been incorporated with a capital stock of \$250,000, for the purpose of manufacturing Stoves, &c. The incorporators are George H. B. Martin, William F. Erdell and F. H. Hansell.

THE SPENCE-BAGGS STOVE COMPANY, Martin's Ferry, Ohio, contemplate adding the manufacture of Gas Stoves to their line.

THE PHILLIPS & BUTTORFF MFG. COMPANY, Nashville, Tenn., have received from the Mississippi Industrial Institute and College of Columbus, Miss., a contract for a National Steel Range with a capacity of cooking food for 500 persons at a meal. There was considerable competition for the contract.

THE LENNOX MFG. COMPANY, Marshalltown, Iowa, have introduced some improvements in their Torrid Zone Coal Furnace and are offering the various sizes under the designation Series E. The Furnace is constructed with a sectional fire pot, made either of fire brick or cast iron, but has no connection with the hot air chamber, being inclosed with a solid steel body, thus preventing all danger of leakage of gas or dust by rea-

son of packed joints or cracked fire pot. The indirect radiator is made with a hanging partition in the center and extends from the top to 8 inches from the bottom. Near the top of this partition is a chamber which, when closed, causes the hot gases to pass down the inner side to the bottom and return to the top on the other side. In this way it is claimed that much of the heat that would otherwise pass to the chimney is retained in the Furnace. The company issued for distribution at the Iowa State Fair some interesting circulars relating to these Furnaces and to the Lennox Wood Furnace, which they also manufacture. They mention the fact that their trade is far ahead of last year and fully up to expectations.

THE PENINSULAR STOVE COMPANY, Detroit, Mich., are sending out a four-page folder describing the principal features of the Diamond Peninsular Steel Oven Cook Stove, which is made with four boiler holes in the top surface. Among the features to which especial attention is invited are square oven with asbestos covered top, which, it is claimed, equalizes the heat; nickel steel oven shelf; Never-Break steel oven rack, which is always clean and when placed on the oven bottom allows circulation of air under the pan; Never-Break steel base; nested griddle cover, which is furnished with every Peninsular Cook Stove or Range; large reservoir and a fire box fitted with heavy sectional linings and duplex grate. Reference is also made in the folder to the Economy Peninsular Steel Oven Cook Stove, using duplex or flat shaking grate. The claim is made that the steel oven gives 50 per cent. more capacity by baking on the oven rack and the oven bottom at the same time.

THE WESTERN STOVE COMPANY, LIMITED, with a capital of \$50,000, have applied for a charter in Ontario, Canada. The promoters of the new company are Frank J. Taylor, who for some years has been buyer for the Gurney Foundry Company of Toronto, and J. J. Cunningham, formerly superintendent of the company. The new concern have purchased the plant of the National Iron Works at Wingham, Ont., and expect to have Stoves and Ranges on the market this fall.

THE DETROIT VAPOR STOVE COMPANY, Detroit, Mich., have just acquired title to 95 feet of ground between Dequindre and Franklin streets, extending through to Woodbridge street. On this site the company intend to proceed at once with the erection of a large factory, the main building covering an area of 50 x 100 feet, with an addition of lesser size. The plans are being prepared by Architect Harry W. Chamberlain. The new building has been found necessary in order to give the company increased manufacturing facilities. Heretofore much of their product has been made to order, but we understand that it is the intention of the concern to make their own goods hereafter. Julien D. Dickinson is the president of the company, George H. Harris is treasurer, Paul D. Dulitz is secretary and John S. Sherman is manager.

It is stated that large numbers of Stoves made by the inmates of the Oregon Penitentiary are being shipped to San Francisco, and that members of the Iron Trades' Council are making a strong fight against the sale of the goods in that city. It is stated that Lowenberg, Going & Co., who handle the products of the Oregon State Prison, have changed the firm name to the Acme Steel Range Company of Boston.

AMONG the many advertising novelties sent out by the Michigan Stove Company is a wall match safe made of decorated tin, which they are furnishing their agents for distribution to housewives. It is ornamented with a *fac-simile* of the Garland trade-mark, and upon the receptacle for the matches is the inscription, "Compliments of the Garland Agency."

THE GREAT WESTERN STOVE WORKS, Leavenworth, Kan., have just received an order for two Banquet Cooking Ranges to be shipped to Norway. The order is from two Norwegians, who formerly lived in America and who have recently returned to their native country. The Stoves will be shipped to Akatieselskabet Skyerva, Aalesand, Norway.

THE CANTON PERFECT BLAST FURNACE is the subject discussed in a 32-page pamphlet which is being sent out



by the manufacturers, the Bonnot Company of Canton, Ohio. The Furnace is described at considerable length, special attention being given to the principal features of construction. A sectional view is shown, clearly indicating the passage of the products of combustion and hot gases through what is known as the secondary radiator, which is designed to retain the unused results of combustion until they give off their heat and thus utilize a large percentage that would otherwise escape to the chimney. Some hints on Furnace setting and management are presented, together with brief remarks on ventilation. Fully half of the pamphlet is given up to testimonial letters from some of those who have used the Furnace, the letters coming from widely scattered sections of the country.

It is stated that the Enterprise Stove Works, Vincennes, Ind., which were destroyed by fire in May last, will not be rebuilt, but everything available will be sold.

THE BORN STEEL RANGE COMPANY, Cleveland, Ohio, have commenced work on an addition to their plant, which will greatly increase their capacity.

WALTER A. CLARK of the Phillips & Clark Stove Company, and Joseph A. Quay of the Summit Foundry Company, Geneva, N. Y., attended the monthly meeting of the Stove manufacturers of New York State, which was held at Rochester on August 21.

CHARLES C. HEATH & Co., 136 and 138 North Second street, Philadelphia, Pa., send us a *fac-simile* of the premium tag which they are using on orders for Stove Repairs. To the dealer saving 200 of these premium shipping tags the company offer, free of charge, a 1000 mile mileage book on any railroad. The company state that they carry in stock Repairs for 20,000 different kinds of Stoves, Ranges and Heaters and that they also manufacture Asbestos Wick Rings for All-Blue Flame Oil Stoves. They are also sales agents for Aluminum and Electric Oil Heaters.

THE LINCOLN STOVE & RANGE COMPANY, with factories in Detroit, Mich., and Toledo, Ohio, have decided to locate another plant in Fremont, Ohio, where work has already been begun on the foundry and machine shops. It is expected that the concern will be in active operation early in the winter, turning out all kinds of Steel Ranges and Stoves. It is stated that 50 hands will be employed at the start.

THE NOYES & NUTTER MFG. COMPANY, 23-27 Central street, Bangor, Maine, have brought out a new Furnace in two sizes, having 22 and 26 inch fire pots and designed for burning wood or coal as a fuel. It is known as the Kineo Oak and has large radiator and dock ash grate, which can be readily removed for the purpose of making repairs. All parts are made of extra heavy castings, the fire pot is large and the radiator is made of heavy sheet steel.

THE MONARCH VENTILATOR No. 164 is referred to by the Monarch Stove Mfg. Company of Mansfield, Ohio, as a "calorific wonder." It has been improved for 1902 by substituting a cast iron fire box section in place of sheet steel, this step having been found advisable by reason of the intense heat generated. There are two 15-inch burners, with four rows of gas orifices in each, producing a fire which quickly sets the incandescent brick clinkers to glowing. The Heater stands 33 inches high, is 20 inches wide and has a depth of 13 inches.

THE READING STOVE WORKS, Orr, Painter & Co., proprietors, Reading, Pa., make a rather interesting announcement regarding the continuance of the hard coal miners' strike and call attention to the fact that they manufacture a complete line of Heating and Cooking Stoves constructed especially for using soft coal; also a line of wood burners. Special reference is made to their Mystic Sunshine Range, which is offered in the usual styles and sizes. This is the second season for this Range, and its popularity is said to be constantly growing.

THE BORN STEEL RANGE COMPANY, Cleveland, Ohio, refer to their Born Steel Plate Ranges as combining all the features necessary to make them high grade constructions. They have balanced oven doors, with tough malleable iron frames, double steel plate bodles inter-

lined with asbestos, reversible duplex grates, which can be used for coal or for wood, patent removable oven bottoms that do not warp and cast shields at the sides of the top flue to retain the heat and protect the joints between the walls and oven.

CHARLES C. HEATH & Co. of Philadelphia and Baltimore, manufacturers and jobbers of Stoves, Ranges, Furnaces and Stove Supplies, advise us that they will mail an attractive souvenir on the first of the year to all dealers whose names are on their books during 1902.

WILLIAM G. WILLARD, 619 North Fourth street, St. Louis, Mo., is offering last year's pattern of his 400-pound Willard Steel Range at a figure which cannot fail to command the attention of dealers generally. The low figure is named in order to close out this pattern, as the patterns for his 1902 line have now been completed. The Willard Steel Range referred to has six 8-inch covers, a top cooking surface measuring 30 x 36 inches, duplex grate and large oven. Descriptive circulars have been issued by Mr. Willard calling attention to the essential features of construction.

THE WALKER & PRATT MFG. COMPANY, Boston, Mass., state that the unusual demand for Crawford Ranges and other goods made in their factory has rendered it necessary for them to double their melting capacity. They have therefore added a second cupola to their equipment. With both cupolas in operation they can now melt 50 tons of Pig Iron a day. The shipments of Crawford Ranges for the months of June and July are said to have shown an increase of more than 80 per cent. as compared with a year ago. The above and much other interesting information relative to the Crawford goods is contained in the "Two Cupola number" of the *Crawford News*, a four-page folder which the company occasionally issue for circulation among the trade.

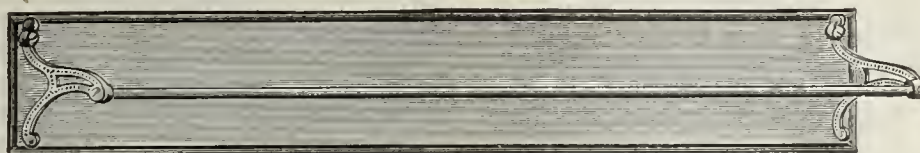
WE have received from Henry Gleason, 258 Broadway, New York City, a heavy cardboard poster illustrating some of the many specialties for which he is agent. The list includes the Standard Oven Indicator made by the Helios-Upton Company of Peabody, Mass.; Stove Trimmings, turned out by the Matthews Mfg. Company of Worcester, Mass., and the Swedoh Cold Rolled Steel Nickel Plated Stove and Range Trimmings made by the American Tube & Stamping Company, Bridgeport, Conn., successors to the Wilmot & Hobbs Mfg. Company. The specialties of this concern include Oil and Gas Stove Domes, Feet, Rings and Sections, Angle Irons for corners of steel ranges, Brackets used for warming closets, Range or Edge Bands of every description and Nickel Plated Tubing for Towel Rods. The card is printed in two colors with a red cord for hanging it in a conspicuous place.

A FOUR-PAGE folder, which is being sent out by the Simpson Stove & Mfg. Company, Pittsburgh, Pa., makes the announcement that "the time to get ready for business is when business is getting ready for you—or for your competitor. Now is the time to be ready to get more than your share of the season's Gas Heating Stove business." The folder also refers to the fact that the Simpson line, taken as a whole, is an excellent seller by reason of its efficiency and economy and because it possesses unique points of merit which, it is claimed, places it far beyond the reach of competition. Special attention is directed to the Simpson Multiple Action Stove, which is fitted with a one-piece corrugated fire pot, affording a great amount of heating surface and positively preventing the gases from mixing with the hot air and escaping into the room. The folder is intended for sending through the mail. The part to which the postage stamp is attached carries the picture of a district messenger boy seated on a box on the sidewalk puffing a cigarette and reading a yellow covered novel entitled "Wild Dick." At his side on the walk is a telegram marked in large letters "Rush." With this picture on its face it is not surprising that the circular should bear the suggestive title, "You Had Better Hurry." It refers, of course, not so much to the district messenger boy as it does to the dealer who has not made proper preparations to handle a large Stove business.



### Imperial Roller Towel Rack.

The Franklin Specialty Company, 627-631 Franklin street, Reading, Pa., are the manufacturers of the Imperial roller towel rack shown in the accompanying cut. It consists of brackets, rod and screws, all finely nickel plated, and is adapted for use in bathrooms, kitchens, closets or any desirable place. The rack presents a neat appearance and sells at a moderate price. The Franklin Specialty Company, who have recently

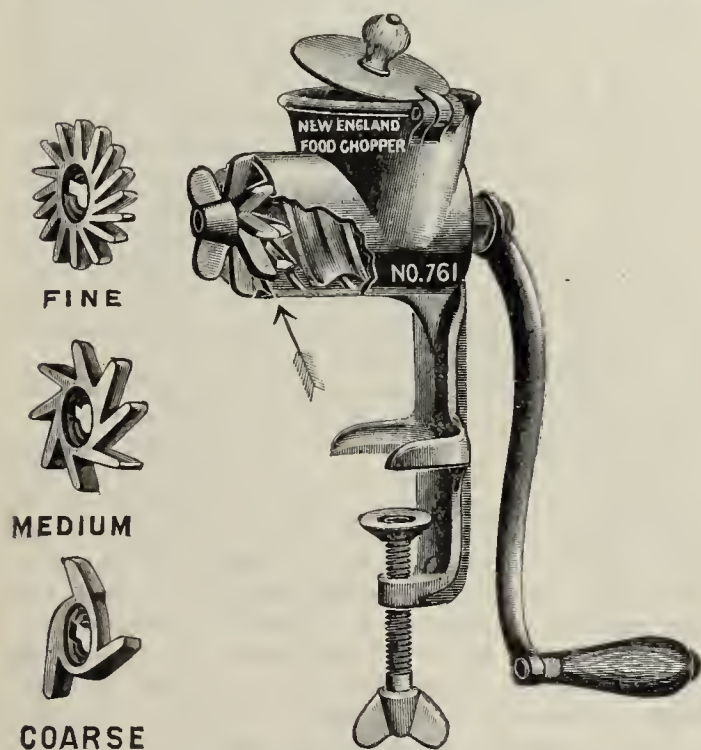


*Imperial Roller Towel Rack.*

moved into their present plant, are manufacturing a line of high grade nickel plated hardware and household specialties.

### The New England Food Chopper.

Illustrated herewith is a food chopper put on the market by the Smlth & Hemenway Company, 296 Broadway, N. Y. Referring to the chopper, the company state that all cutting surfaces are ground, insuring perfect accuracy at the most essential points, and that all parts are made to gauge, are interchangeable and that duplicate parts can be furnished at any time. The three self sharpening knives shown at the side of the chopper vary in degree of fineness, allowing coarse, medium or fine chopping, as desired. The use of the lid does away with the necessity of pressing the food to be cut against the screw with the fingers. Among the points of excellence the following are mentioned: That the chopper is simple in construction, easily cleaned and easy to



*The New England Food Chopper.*

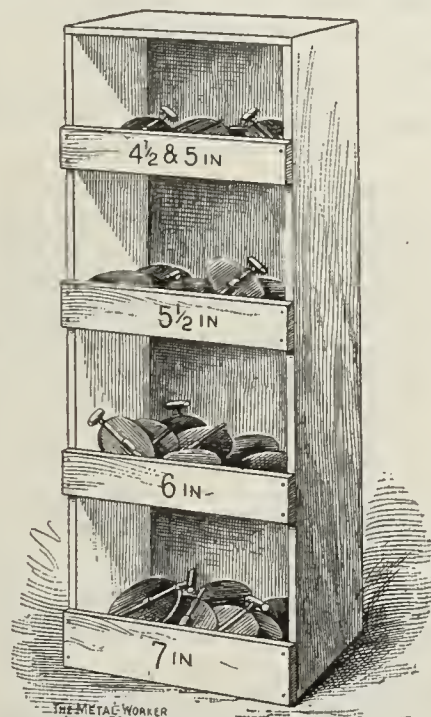
operate; that all of its cutting edges are sharp and its knives self sharpening; that it is heavily coated with pure tin, preventing corrosion; that the machine cuts and does not bruise, mash or tear the food; that the food is carried forward by the screw from the hopper to the front end of the case, where it is cut by the sharp edges on the inner side of the discharge openings, and is then severed into pieces of the desired size by the final cutting of the outside steel knives. The chopper can be used, it is explained, to chop raw or cooked meat, chicken, turkey, game, lobster, oysters, clams, tongue, giblets, suet, figs, citron, raisins, apples, nuts, spices, potatoes, cabbage, onions, carrots, celery, parsley, horseradish, slaw, &c.; also in preparing beef tea, sausages, puddings, soups,

mincemeat, hash, stuffings, sandwiches, relishes, salads, fruit and nut cake, chow chow, gravies, veal or chicken loaf, Welsh rabbit, croquettes, potted meats, fish cakes, cracker dust, bread crumbs, patties, fruit sauces, &c.

### Keeping Dampers.

Instead of hanging dampers on wires, as is the custom in so many shops, G. H. Wheeler, Seymour, Conn., uses

a little stand in which there are four bins. This is made of rough lumber, but serves its purpose admirably. In the top compartment are kept 4½ and 5 inch dampers; in the next are 5½-inch, in the next 6-inch and in the bottom space 7-inch dampers. The sizes are plainly



*Keeping Dampers.*

marked on the front of the bins, as shown in the accompanying illustration.

### Cream City Ware.

An illustrated catalogue and price-list of 264 pages has just been issued by Geuder & Paeschke Mfg. Company, St. Paul Avenue and Fifteenth street, Milwaukee, Wis. The publication covers their products under the generic name of Cream City ware. Following the introductory pages, views are presented of the company's establishment at different stages of their existence, from the year 1880, when it is shown in a small two-story store building, up to the present year, when it occupies two city blocks. A complete alphabetical index of the goods included in the catalogue occupies six pages at the beginning of the catalogue. The catalogue is divided into seven departments covering respectively pieced tinware, to which about 90 pages are devoted; anti-rust tinware, sheet iron ware, stamped ware, japanned ware, miscellaneous goods and enameled ware. The illustrations in the last named department are in the natural colors of blue and gray in which the ware is manufactured. The catalogue is profusely illustrated with good engravings and covers all the various lines of goods known on the market in the various qualities of finish indicated above.

Among the specialties made by the company are Cream City cream cans and railroad milk cans; also the



Badger railroad milk cans with all kinds of dairy supplies. The Cream City Anti-rust tinware covers, dish pans, tea kettles, wash boilers, bowls, drinking cups, cream cans, dairy pails, &c. A fine line of black and galvanized sheet iron ware embraces wash boilers, Cream City baskets, garbage and ash cans, well buckets, oil cans, gasoline cans, stove pipe, roof top caps, chimney thimbles, stove drums, four-piece adjustable and corrugated elbows, oilers, coal hods and grain measures, water pails, roasting pans, wash tubs, fire shovels, &c. The stamped ware, of which the company make a long line, occupies over 40 pages, which are followed by a line of japanned ware, including wash bowls and pitchers, minnow buckets, fishing tackle boxes, flour boxes, bread, cake and spice boxes, folding lunch boxes, cuspidors, trays, chamber pails, dust pans, bathtubs and many other goods. Some handsome decorated toilet sets are also included. The company's line of blue and gray enamel ware completes the book.

### Stove and Hardware Dealers.

AMONG the concerns recently incorporated are the Winn Mfg. Company of Kansas City, Mo., with a capital of \$50,000. The new company will deal in Stoves, Furnaces and Hardware and the incorporators are D. F. Winn, E. Etzenhauser and John Seaford.

THE Stove and Tinware store of Spiro & Long, at 1920 Third avenue, Birmingham, Ala., was recently visited by a disastrous fire which damaged their stock and building to the extent of about \$15,000.

S. A. FOOTE & SON have succeeded S. A. Foote in the Stove, Hardware, Agricultural Implement, Wind Mill, plumbing and furniture business in Parkersburg, Iowa. The new firm have remodeled their furniture department and have made additions to their entire stock.

BUTLER & HAGAMAN have succeeded Wm. Butler in the retail Stove, Tinware, Hardware, Agricultural Implement and Sporting Goods business in North Branch, Mich.

THE second annual picnic of the employees of F. E. Myers & Bro., Ashland, Ohio, was held on Saturday, 16th inst., at Silver Lake. More than 2600 excursionists participated, and the occasion was a most successful one in every respect. The company refer to the attitude of their employees and friends as exceedingly complimentary, and the interest manifested in the picnic as showing a state of affairs that is highly appreciated by the concern, demonstrating, as it does, that the relations between employers and employees are exceptionally cordial. On Monday evening, 18th inst., at the residence of F. E. Myers, a reception was tendered to P. A. Myers, who had just returned home after an absence of over two months, during which time he visited England and the principal European countries.

MOORE & HAWKINS is the name of a new firm who will do business at the former stand of Orton, Smith & Moore, Elgin, Ill. Messrs. Orton and Smith have withdrawn from the firm, and Leo Hawkins has entered into partnership with Mr. Moore under the above style. Mr. Hawkins studied civil engineering at the University of Michigan, leaving there about a year ago to accept a position in the bridge department of the Chicago, Milwaukee & St. Paul Railway. The firm expect to put in a new store front, new fixtures and to largely increase the stock, which comprises Shelf Hardware, Stoves and Tinware, with heating, plumbing, furnace work and gas machine department.

W. J. VANPETTEN has bought the Stove, Tinware, Hardware and Sporting Goods stock of John Stanley at Elmwood, Ill., and will continue this long established business at the old stand. Mr. Van Petten has been identified with the lumber business of Elmwood for the past ten years.

E. L. RASBERRY has succeeded Hamilton & Rasberry in the retail Stove, Tinware, Hardware, Agricultural Implement and Wagon and Buggy business in Rockdale, Texas.

KUTSCHBACK, HOLMAN & HOCH, in the wholesale and retail Stove, Hardware and Implement business in Tay-

lor, Texas, have been succeeded by the Holman & Hoch Hardware Company.

THE HUGHES HARDWARE COMPANY have engaged in business at Cushing, O. T., handling Stoves, Tinware, Shelf and Heavy Hardware, Paints, Harness and Sporting Goods.

D. J. BOND has opened a new store in Prague, O. T. Mr. Bond's stock comprises both Tinware, Stoves, Shelf and Heavy Hardware and Agricultural Implements.

M. M. TULLIS & Co., Driftwood, O. T., have opened a general store, handling Stoves, Hardware, Farming Implements, groceries, &c.

W. A. ROACH has purchased the Stove, Hardware and Agricultural Implement business of J. M. Summer & Son, Paris, Texas.

WEIGHT HARDWARE COMPANY, Rosebud, Texas, have been incorporated with a capital stock of \$20,000. The company are dealers in Stoves, Tinware, Shelf and Heavy Hardware, Agricultural Implements, Sporting Goods, Buggies, Wagons, Wind Mills, &c.

HENRY & ROBERTS BROS., a stock company with a capital of \$12,000, have succeeded J. L. Henry in the Stove, Hardware and furniture business in Centralla, Mo. They are erecting a new brick building, 50 feet wide and 100 feet long, two stories high.

THE Stove, Tinware and Roofing establishment of S. Spiro, Birmingham, Ala., was destroyed by fire last week. The loss is estimated at \$10,000, partially covered by insurance.

### Soldering Aluminum.

Much has been written about the soldering of aluminum and a number of aluminum solders have appeared on the market, but as a matter of fact a perfect solder, which not only will do the work of joining the white metal but will withstand the test of time and use, is yet to be found. An apparently well-soldered joint will frequently corrode after a few months' exposure to the atmosphere. Moreover, none of the existing solders will flow into the joint by capillary action, but must be placed upon the surface of the metal. The following directions for soldering aluminum given by the *American Blacksmith* furnish, however, some useful hints that may prove of interest and value to some of our readers:

Small surfaces of aluminum can be soldered by the use of zinc and Venetian turpentine. Place the solder upon the metal together with the turpentine and heat very gently with a blow-pipe until the solder is entirely melted. The trouble with this as with other solders is that it will not flow gently on the metal. Therefore large surfaces cannot be easily soldered.

J. S. Sellon patents the following method: Clean the aluminum surfaces by scraping, and then cover with a layer of paraffine wax as a flux. Then coat the surfaces by fusion with a layer of an alloy of zinc, tin and lead, preferably in the following proportions: Zinc, 5; tin, 2; lead, 1. The metallic surfaces thus prepared can be soldered together either by means of zinc or cadmium, or alloys of aluminum with these metals. In fact, any good soldering preparation will answer the purpose.

A good solder for low grade work is the following: Tin, 95; bismuth, 5. A good flux in all cases is either stearin, vaseline, paraffine, copaiba balsam, or benzine.

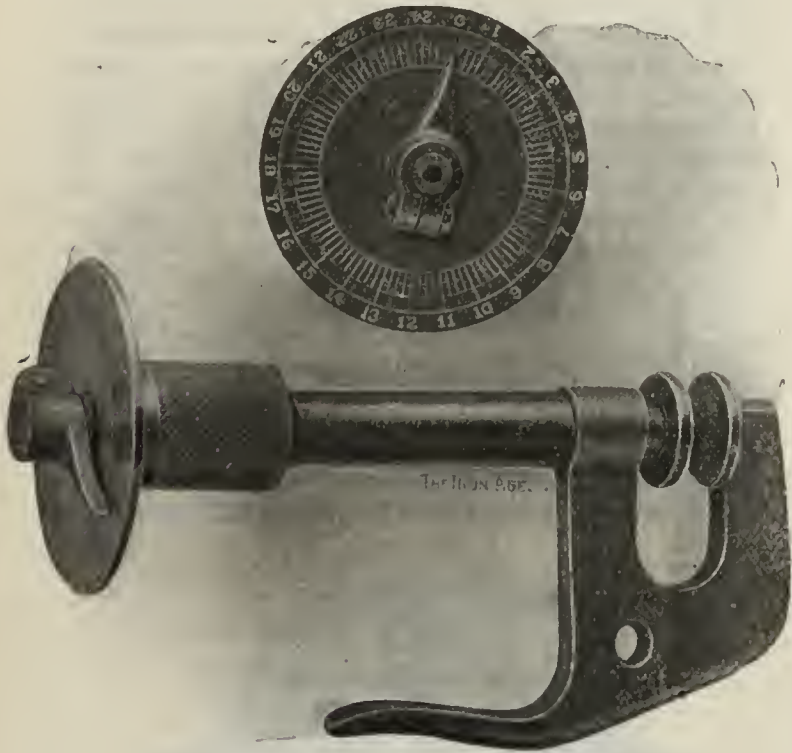
In the operation of soldering small tools made of aluminum are used, which facilitate at the same time the fusion of the solder and its adhesion to the previously prepared surfaces. Tools made of copper or brass must be strictly avoided as they would form colored alloys with the aluminum and the solder.

United States Consul Frank D. Hill of Amsterdam, Holland, states that he is prepared to receive from American manufacturers and exporters copies of their catalogues, as he intends to devote a room in the Consulate exclusively to circulars and catalogues of American firms, folders of American railways and steamship lines, &c. The Consul states that he has received many visits lately from people interested in the import trade who desire data in regard to United States industries.



### The Slocomb Sheet Metal or Rubber Gauge.

The gauge designed by J. T. Slocomb & Co. of Providence, R. I., differs from other micrometers in several important points. The thimble makes but one revolution in measuring the full extent of its range— $\frac{1}{4}$  inch—



The Slocomb Sheet Metal or Rubber Gauge.

and there is but one scale of graduations, which are all on a dial in plain sight. The lead of the measuring screw is so great that there is not much chance of measuring differently on account of different degrees of pressure on soft material. The instrument is held and

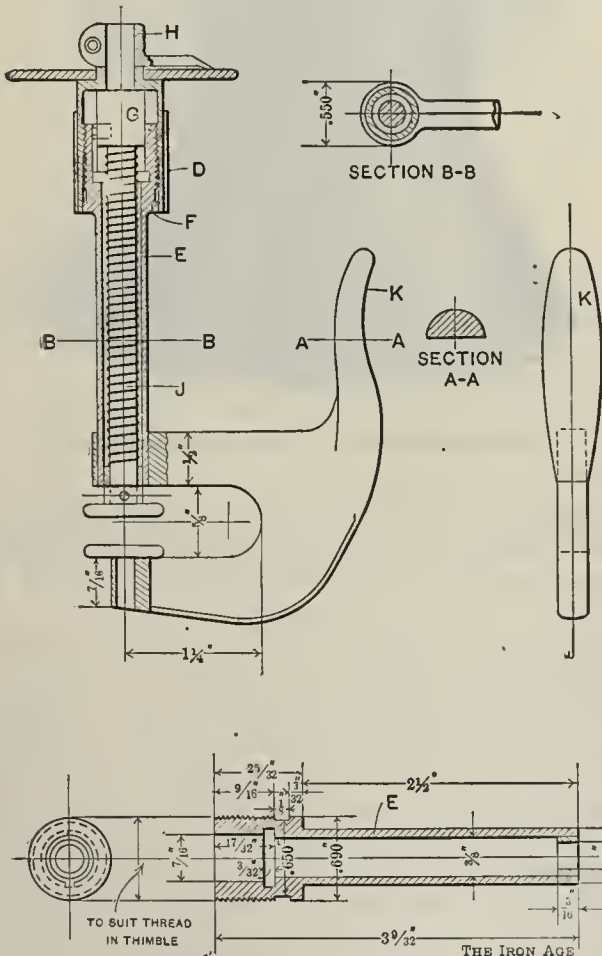


Fig. 2.—Details of the Slocomb Gauge.

operated entirely by one hand, leaving the other free to hold the work. Neither of the measuring points revolves, which is an advantage when gauging soft or sticky material.

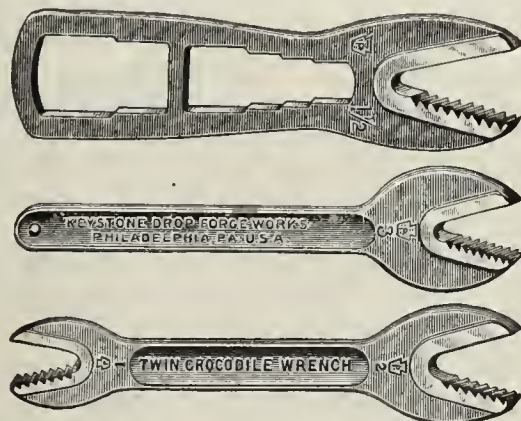
The construction is plainly shown in the drawings, Fig. 2. The thimble D has an internal thread  $\frac{1}{4}$  inch long. The enlarged end of the sleeve E has an external thread to fit the thimble, but  $\frac{1}{2}$  inch long, thereby allowing the range of travel to come on the external thread, which

is accurately cut. The thimble has also a plain bore at F which fits loosely an enlarged part of the sleeve E, excluding all dirt from the screw threads. This screw thread is multiple cut 32 P., but  $\frac{1}{4}$ -inch lead. The plunger G has two bearings in the sleeve E, one in enlarged bore in the thimble end and one in the bushing near the measuring cap, and slides freely through these bearings, but is prevented from turning by a small key working in a keyway in the sleeve E. The pointer H is clamped to the end of the plunger and does not revolve, but the dial revolves under it. The dial is attached rigidly to the thimble. Surrounding the plunger and inside of the sleeve there is a spring, J. This spring is under compression and torsion and takes up backlash in the screw threads, also on the thrust of the plunger inside of the thimble, and by its torsion keeps the key bearing on one side of its keyway and thereby preventing the pointer from shifting its position on account of some looseness in the key fit. The gauge is held with the handle K resting in the palm of the hand, with the thumb and forefinger on the thimble and the other fingers on the sleeve E, in which position the thimble is quickly and easily operated by thumb and forefinger. The adjustment for wear, except what is taken care of by the spring, is made by shifting the pointer.

These gauges are made with small points adapted for measuring metal, and also with differently graduated dials, some in thousandths of an inch and others to correspond with the different wire gauges.

### Keystone Crocodile Wrenches.

The Keystone Drop Forge Company, Philadelphia, Pa., are placing on the market a new line of steel drop forged wrenches, known as the Keystone Crocodile wrenches, which we illustrate herewith. These wrenches, they advise us, are drop forged from the same grade of pipe wrench steel as is used in other patented wrenches, and which permits of the jaws being tempered and hardened without danger of the teeth either flaking or crushing, as would be the case if such goods were made



Keystone Crocodile Wrenches.

from a grade of steel in which the carbon was unevenly distributed. The handles are designed with a flute on each side, thereby giving a better grip to the fingers of the user as well as a broader edge for the resistance against the hand. Another feature of these goods is that they are made solid throughout and not built up by welding a handle to the head and welding an inserted tool steel jaw to a soft steel head. The wrenches are being made in three styles, as shown by the cuts. No. 1  $\frac{1}{2}$  is 5  $\frac{3}{4}$  inches long; Nos. 2, 3, 4, 4  $\frac{1}{2}$  and 5 range from 9 to 27 inches long and are made with a solid handle. The twin wrench is made only in 10-inch length.

Professor A. G. Bell is quoted as predicting that wireless telegraphy will never supplant wires in land service on account of the interference of the various stations. He considers the supremacy of the wireless method much more probable for transoceanic systems. Marconi reports having received messages on the Italian flagship "Carlo Alberto" which were sent from Cornwall across England and a portion of Denmark. The distances were from 850 to 1400 miles. It is reported that a submarine torpedo boat at Cherbourg, France, fitted with a mast and wireless telegraph receiver, received distinct signals from a central station. The distance is not stated.



## JOURNEYMEN PLUMBERS' ANNUAL MEETING.

The annual convention of the United Association of Plumbers', Gas Fitters' and Steam Fitters' Helpers, held last week in Omaha, Neb., adjourned on Saturday, after having elected the following officers to serve for the ensuing year:

*President*, William M. Merrick, Beverly, Mass.

*Secretary-Treasurer*, I. W. Tilden, Chicago.

*Grand Organizer*, William J. Spencer, Sioux City, Iowa.

*Auxiliary Secretary*, W. Burke, Chicago.

Birmingham, Ala., was chosen as the place for meeting next year. The convention was attended by more than 100 delegates. The salaries of the president, secretary-treasurer and grand organizer were readjusted, and each official in future will receive a salary of \$1500 a year. The revised constitution and by-laws presented by the committee appointed at the last annual convention will go before the local lodges for a referendum vote on October 27.

The report of Secretary Tilden showed that on June 30 the end of the association's fiscal year, the membership was 14,789, an increase of 2987 members over last year. In the interval the number of local unions had grown from 280 to 339, an increase of 59 unions. Among the changes recommended in the constitution was one to the effect that no local lodges can go out on strike without the consent of the National Association, any lodge doing so forfeiting all strike benefits. This is expected to minimize the number of strikes. As authorized by the association, strikers will be paid \$5 a week for the first 16 weeks and \$3 a week after that. The sick members of the association can draw to the extent of \$5 a week for 13 weeks. The superannuation benefit will pay those who have been members for 20 consecutive years, \$300; 25 years, \$400, and 30 years, \$500. In order to pay these benefits the committee propose a weekly tax of 30 cents upon each member.

## Richmond, N. Y., Plumbers' Outing.

Richmond Branch of the Association of Master Plumbers of New York City outdid itself last Tuesday in the way it entertained its friends and members at the clam bake given at Silver Lake Park. The bake, although a little late in being served, was all right when it got there. Business Manager D. S. Melville was in charge of the service and soon had everything "coming his way." A novel feature was the naval battle on the lake between Admirals Brown and Macdonald, two of the distinguished guests.

The various New York City branches were represented by A. H. Brown, B. F. Donohue, I. J. Brown, Philip Brady and W. M. Lockwood of Manhattan; Ed. Macdonald of Brooklyn and J. V. McEvily of the Bronx. Messrs. Macdonald and Jones represented the Examining Board. Park Commissioner Kohlmann, Inspectors Silles and Lantry and other officials were present.

The following houses in the supply trade were represented: F. N. Du Bois & Co., John Simmons Company, Behrer & Co., J. L. Mott Iron Works, Cleveland Faucet Company, Boynton Furnace Company, A. L. Perkins of Jersey City, Gorton & Lidgerwood, Henry McShane & Co. and Hull, Camp & Co. Among the Richmond plumbers attending were W. J. Barry, E. D. Clark, T. E. Halloran, Fred. Rauscher, E. Savenhaur, Daniel Barnes, W. T. Warren, M. Lewis, John Duff, T. F. Santry and C. R. Heap.

A MOVEMENT is reported to be on foot among the journeymen plumbers throughout the State of Massachusetts toward allowing the journeymen to make their own lead traps and to line tanks for closets, instead of using the goods in this line furnished by the wholesale dealers. Formerly the work of lining tanks and making traps was done by the journeymen. This afforded the men considerable employment. It is claimed, in support of the demand of the men, that the lead traps and tank linings furnished by the dealers are often of such flimsy char-

acter that they last but a few months, while the work done by the journeymen was of a more substantial character. It is said that a convention of the journeymen's unions in Massachusetts will be called for the purpose of taking action on this matter.

## Pathfinder Portable Acetylene Generator.

A new type of portable acetylene generator has been placed on the market by Henry Giessel & Co., Chicago, as herewith illustrated. The apparatus, in which lump carbide is used, it is explained, is a departure from other types of generators, inasmuch as it has no gas bell and maintains an even pressure without any mechanical regulators. When the generator is charged its action is governed entirely by the gas tips or burners throughout the premises. Turning on one burner, then turning on two burners, it will generate proportionately for the two as for one, three, five or as many lights as are required, under the same low pressure at all times whether with one light or many. The method of supplying the carbide with water to insure a positive and uniform pressure, is as follows:

Inside the generator chamber is placed the carbide



Pathfinder Portable Acetylene Generator.

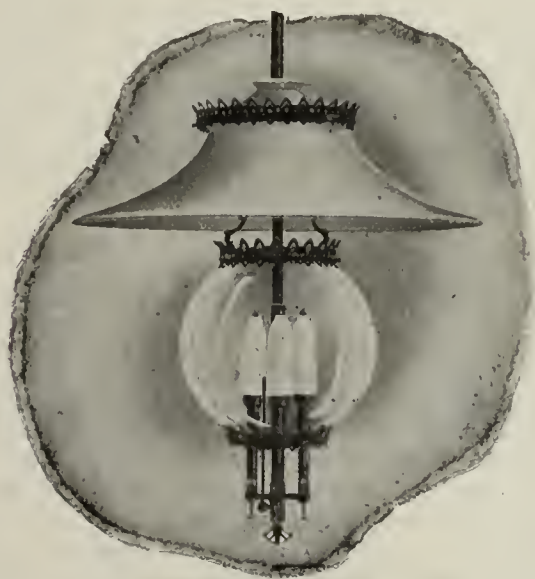
cup, which has the requisite number of small tubes to conduct a sufficient quantity of water to the carbide in the cup, when the carbide will be decomposed and the gas formed. The pressure of gas at this period of the process being light and the water pressure being the strongest, water is forced into the carbide cup (through the small tube or tubes) and generates gas at once, but as the pressure of the gas becomes stronger it shuts off the flow of water, forcing it back into the water tank. When the pressure of the gas decreases, as it is consumed through the burner, the water will again flow back through the tubes. This action will be repeated automatically until the carbide is all consumed and the water will then flood the carbide bucket, thereby decomposing all carbide and leaving no odor in the generator whatever. The operation of the machine, it is pointed out, is not in the least affected by any jolting, jarring, or rolling action, or any motion short of completely overturning, and hence it is peculiarly adapted for locomotive headlights, yachts, launches, stereopticons, car lighting, tents, lunch wagons, camping parties, lawn parties, stores, night work for construction, &c.

The machine is made in five sizes for operating from one to ten lights, is built strongly and the makers claim that it will stand any use to which an apparatus of this type is subjected.



### The Columbus Gas Arc Lamp.

Since the advent of the electric arc light considerable annoyance has been experienced by its occasional failure and its periodical cessation of illumination. This has caused many to continue the use of gas for illuminating purposes, and has also been the incentive for the manufacture of gas lights of strong illuminating power. In the accompanying illustration, we present a general view of the Columbus gas arc lamp, which is adapted for burning either manufactured or natural gas. These lamps are made by the Federal Mfg. Company, 162 West Long street, Columbus, Ohio, in a variety of styles adapted for both indoor and outdoor use. They are claimed to be constructed upon scientific principles and to be unapproached in quality, appearance and brilliancy of the light. All parts are made with a view to strength and durability as well as to increase the illuminating effect of the gas burned. The lamp is provided with a patent burner and a pilot jet lighter. The burner has a special long Bunsen and needle point adjustments, with a nickel plated steel gas supply pipe and a protecting sleeve. In operation it is said to be economical in the use of the gas while having a strong arc light effect.



*The Columbus Gas Arc Lamp.*

The construction enables the globe to be lowered for cleaning when the Bunsen with mantle in position can be removed and the gauze brushed or broken mantles replaced. The outdoor lamp can be as readily attended to, and is said to stand storms of all characters without effecting its operation. A catalogue devoted to these lamps, which are specially adapted for lighting churches, halls, factories and factory grounds as well as residences, has recently been issued by the company and can be secured on application.

### The Billow System of Fuel Oil Appliances.

Since the discovery of oil in new fields, the interest in appliances for its use as fuel has increased. A 39-page catalogue devoted to the Billow system of fuel oil appliances sent out by the National Supply Company, 315 Dearborn street, Chicago, will appeal to the trade who are interested in devices for making oil available as fuel, under conditions which render its use both satisfactory and serviceable. The Billow system atomizes the oil and can be operated by steam and compressed air. It is so constructed as to require but a minimum of either air or steam to thoroughly separate the oil into small particles so that it can be readily burned with an intense heat without choking, clogging, dripping or being wasteful in either the use of steam, air or oil. The apparatus is constructed of brass by skilled workmen and is designed so that the oil supply can be governed exactly. In appearance the Billow atomizer resembles a cross fitting, one branch receiving the air or steam and another the oil, while a third receives the regulating

governor and the fourth branch is designed to be inserted into the chamber in which the heat is to be generated.

The catalogue shows, in addition to the atomizer, tuyeres, tuyere blocks and the atomizer connected with both steam and air blast; also fuel oil pumping systems, both duplex and single for bringing the fuel to the furnace chamber where it is to be burned. A feature of the publication is a partial list of customers whose plants have been equipped with this system of fuel oil burning. The catalogue also contains tables showing the comparative cost of evaporating 1000 pounds of water with both coal and oil at different costs. It is accompanied by a pamphlet entitled "Fuel Oil and Its Relative Heating Values," compiled by C. O. and E. E. Billow, consulting engineers, which gives interesting information to those who are contemplating the equipment of their boilers and power plants with fuel oil systems.

### Quincy, Mass., Master Plumbers.

The first annual meeting of the Master Plumbers' Association of Quincy and vicinity, was held at the Grand Army Hall, Quincy, Mass., on Friday, August 15, when the following officers were elected to serve during the ensuing year:

*President, M. F. Corbett.*

*First Vice-President, A. E. Damon.*

*Second Vice-President, D. J. S. McCurdy.*

*Secretary, D. H. Keniley.*

*Treasurer, J. E. Luddon.*

The association now numbers 14 members, and bids fair to prove a highly successful organization.

### Standard Boiler Catalogue.

Heating contractors throughout the country are now receiving the latest catalogue devoted to the Standard steam and hot water heating apparatus made by Giblin & Co., Utica, N. Y. The new catalogue consists of 40 pages printed in red and black. The title-page is followed by a notice as to terms, shipments and ratings. In the introductory note attention is called to the essential features of the company's apparatus—namely, vertical circulation, thin water ways, large fire surface, long fire travel and the arrangement so that the travel of the water comes in contact with a constantly higher heated surface as it passes through the boilers. Another feature is the ease with which the heating surface can be cleaned after use, thereby preventing a reduction in heating efficiency. The first portion of the publication is devoted to the Standard vertical sectional return flue steam and hot water heaters, followed by the Standard round boiler, consisting of a water leg and feed section exposing a large heating surface and surrounded by a casing, forming a flue for effecting an indirect fire travel. The 20 Series Standard is a boiler of similar construction just put on the market which the company feel assured will win for itself the popular support of the heating trade and their customers. Two pages are devoted to general directions and useful hints for designing and preparing steam and hot water heating systems. The last 20 pages are occupied by a series of testimonial letters from satisfied customers in various parts of the United States showing the adaptability of the Standard boilers for buildings of all characters and fuels of all kinds.

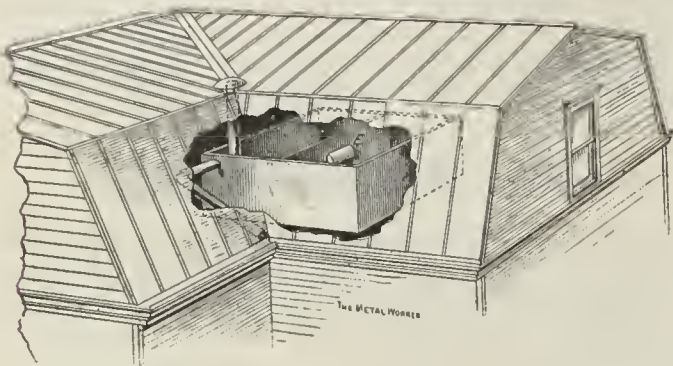
A CATALOGUE by the A. P. Smith Mfg. Company of Newark, N. J., deals with Pipe Fitting Machines for making valve connections and for inserting corporation cocks, and also with their Standard Compression Fire Hydrant, with sliding frost case. The Smith Tapping Machine has been pronounced a most serviceable and economic water works tool by eminent hydraulic engineers, and is made in four sizes, which embrace all cast iron pipe sizes from 2 to 48 inches inclusive. With these machines connection can be made with water, oil, gas or steam mains, without reducing the pressure of any size not exceeding the diameter of the main.



## A COMBINATION HOUSE TANK.

BY HELMAR.

A combination house tank, installed some time since by the writer in a country residence, fulfils some requirements of the house owner that may be of interest to the reader. The house is of heavy frame construction with stone cellar and foundation walls. The roof is a gambrel roof, with the greater part of it forming the flat slope next the comb, as seen in Fig. 1. This gives considerable room in the loft near the outer walls and causes the flat slope to catch most of the water that falls on the roof, which is covered with slate. The



Combination House Tank.—Fig. 1.—Broken View Showing Valley. Inlet and Outlet Pipes.

architect had no thought of the plumber when he made the plans, but these conditions are all favorable and were taken advantage of in locating the tank, as indicated in Fig. 1.

The area of roof drained by the valley of the flat slope was thought sufficient to supply the tank, except in very dry seasons, and as the tank was to take water directly from the roof it was placed so that a large oval pipe could be run straight down into the tank from the point where the valley changes into the steep slope. This opening in the valley has a hood projecting upon the lower side to make all the water from the valley go down into the tank, and the opening is fitted with a wire basket. This plan not only makes possible discharging directly into the tank, but also avoids the mass of leaves, straw, &c., that would have to be contended with if the water was led to the tank from the cornice gutter. It also permits discharging the overflow, which is one-fourth larger than the pipe leading from the roof

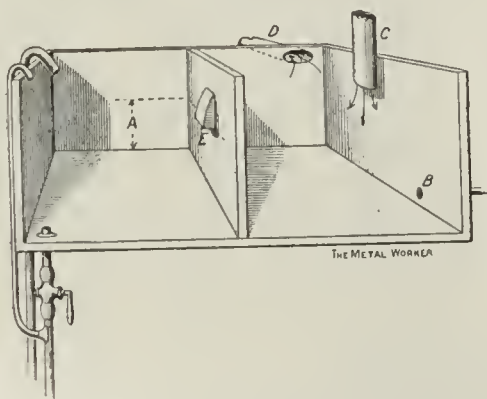


Fig. 2.—Arrangement of Tank and Pipes.

to the tank, directly into the cornice gutter, as indicated in Fig. 1.

The tank, the principal features of which are shown in Fig. E, is 12 x 8 feet and 3 feet deep, giving about 1800 gallons capacity below the bottom of the overflow. The tank is divided in the center to make two compartments, 4 x 12 x 3 feet. It is keyed by tie rods running both ways, the 8-foot rods passing through the casing in both divisions. The two 12-foot rods are placed just high enough for their casing pipes to lie on and be supported by the casing pipes of the 8-foot rods. The wood of the tank is clear white pine, 2 inches thick, with feather joints, and the lead lining is wiped in. As shown by Fig. 2, water enters the tank from the roof through C and overflows to the cornice gutter through D. The water in this part of the tank is termed "unfiltered."

half way up the division wall the water can flow into the other half of the tank through a rectangular opening covered with wire gauze, shown at E in Fig. 2. Water in the latter part is called "filtered." That which flows in from the roof has been merely settled and strained more or less. That which is supplied by the house force pump is from a cistern and was actually filtered as it passed to the cistern from the roof. Placing the opening in the tank division half way up from the bottom, as indicated by A, reserves half the water of the unfiltered side, at all times, for fire purposes, pipe B being run down to the basement, with automatic valve and reel of hose on each floor.

## Thatcher Steam and Hot Water Heaters.

The Thatcher Furnace Company, 240 Water street, New York, have issued an illustrated price-list of their steam and hot water heaters, radiators and specialties. It is of pocket size, which enables it to be readily carried so as to be available for instant use. A full page is given to dimensions, ratings and prices of each type of boiler manufactured by the company, comprising the Thatcher sectional steam heater, Thatcher sectional hot water heater, Comfort steam heater, Comfort hot water heater, Empire steam heater, Empire hot water heater and Sterling hot water heater. The Thatcher two column, three column and Utility radiators receive ample treatment, a full list of sizes being given. Other specialties considered are the Thatcher steam radiator valves, hot water radiator valves, air valves, expansion tanks, floor and ceiling plates, &c.

## The Fowler & Wolfe Wall Radiators.

The Fowler & Wolfe Mfg. Company, 668 and 670 Bourse Building, Philadelphia, Pa., have issued a fifth edition of their catalogue of ornamental wall radiators. The Fowler & Wolfe radiator is a special construction to be attached to a wall, so that absolutely no floor space is occupied by the radiator. These radiators are intended for either steam or hot water, are ornamental in appearance, have been ingeniously designed so that they may be easily applied to any wall space available and have now been in use for a sufficient length of time to demonstrate thoroughly their remarkable efficiency. They are made in four sizes, which have been found to cover all requirements. The catalogue is exquisitely illustrated, showing practical applications of the radiator in a great variety of locations and also giving photographic reproductions of buildings which are equipped with this class of heating apparatus. The catalogue further contains lists of buildings in many cities in which the Fowler & Wolfe radiators have been installed, comprising churches, educational institutions, hospitals and asylums, public buildings, mercantile buildings, hotels and apartment houses, as well as numerous residences and steamships.

## The Twentieth Century Gas Producing Apparatus.

The C. M. Kemp Mfg. Company, Baltimore, Md., have issued an illustrated catalogue which fully describes a gas producing system brought out by this company under the name of the Twentieth Century gas apparatus. This is designed for the production of gas from naphtha, which can be utilized for factory fuel gas, for illumination and for all other uses. It is claimed that by this system an absolutely uniform quality of gas is produced automatically, irrespective of the demand for gas, whether continuous for days, weeks and months, or for an intermittent demand for a few minutes at a time. Absolute safety and simplicity are also among the strong claims made for this system. It can be installed where there is no yard space and can be placed inside the building. A specially interesting feature of this method of manufacturing gas is the statement that it makes gas at less than one-half the cost of city gas.

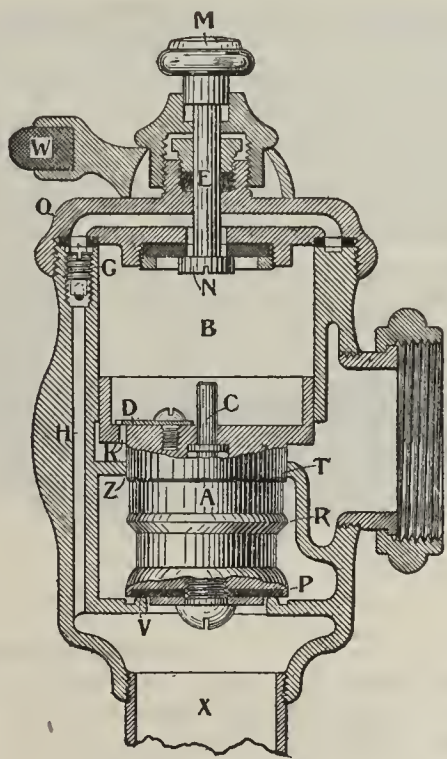


## THE NETHERY HYDRAULIC FLUSH VALVE.

Many changes have been seen in water closet construction and equipment in the past decade, and one of the latest and most popular changes has been the substitution of the flushing valve for the flushing tank. In the accompanying illustration we present some features of the Nethery hydraulic flush valve, made by the Nethery Hydraulic Valve Company, 29 Broadway, New York. An important feature of this valve is that it both opens and closes under and by direct hydraulic pressure, consequently grit and deposits are flushed away and therefore have no effect on its operation. The valves are made of high grade metal and are so constructed that they can be regulated to the proper amount of water required for flushing a closet. They can also be easily regulated to work well under high or low pressure. They are operated by means of the push button at the top, are practically noiseless in operation and use water economically.

Referring to the illustrations, Fig. 1 shows a sectional view of the valve, with the parts lettered for an explanation of the operation, and Fig. 2 shows the valve connected to a side inlet closet, which is the preferred method of use, although it can as effectively be applied to a top inlet closet.

Turning again to Fig. 1, the method of operations is thus explained: The valve is opened by pushing the pushbutton M. The water contained in valve chamber B escapes through the cap O, and down by-pass H, in the valve casing into the discharge pipe X. The rate of discharge through by-pass H, regulated by the screw G regulates the rapidity of the rise of valve piston A. Upon the rising of piston A to the top of valve chamber B, the pin C closes the valve N, whereupon the upper valve chamber B begins to refill through the opening K, in piston head. The rapidity of the filling of the upper valve chamber B, therefore the rapidity of descent of piston A and the quantity of water discharged at each operation of the valve, is controlled by the disk D. By this regulating disk prac-



The Nethery Hydraulic Flush Valve.—Fig. 1.—Sectional View.

tically any desired quantity of water up to 15 or 20 gallons can be drawn at each operation of the valve. In the descent of piston A the closet flush is obtained while the piston area between piston ring P and piston ring R is passing the supply opening, and the closet seal or refill is accomplished while the piston is passing opening from piston ring R to piston ring T, at which point of its descent the base of piston has reached its seat V and flow ceases. In order to avoid waste of water by the push button being held down, the valve

operates automatically to raise the piston to such a position as to close the supply opening.

The essential working parts of this valve are cast solid, insuring their strength and durability. These valves have been used in a number of important buildings and handled with satisfaction by some prominent

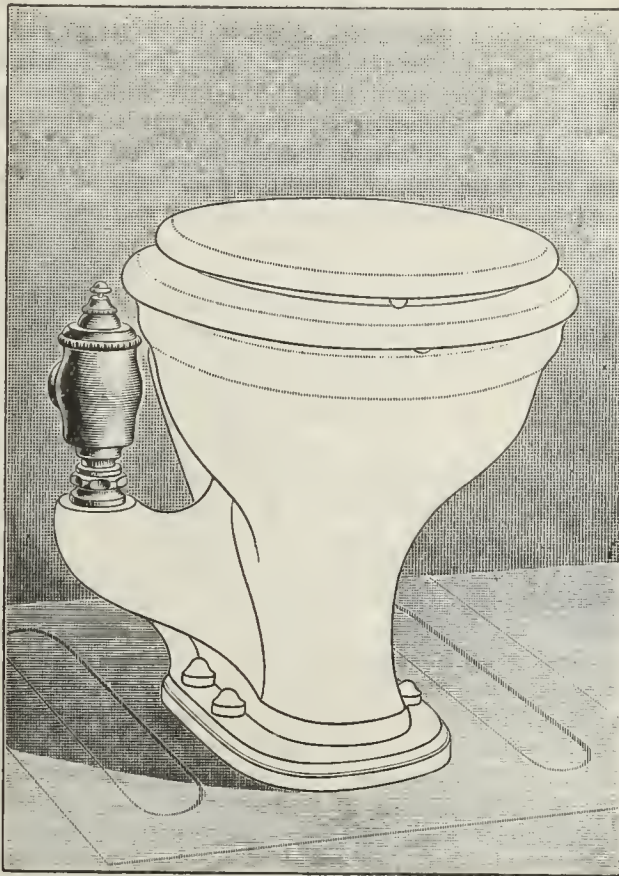


Fig. 2.—Valve Connected to a Side Inlet Closet.

jobbing houses, as shown by the testimonials presented in a handsome catalogue issued by the company.

## Very Ancient Plumbing

The Rev. Dr. A. T. Clay, writing in the September *Woman's Home Companion* on "Digging Up a Bible City," presents some very interesting news relating to discoveries made in the excavation of the city of Nippur, where some finds were made which prove that some of what are commonly looked upon as modern inventions are really of very ancient origin. Dr. Clay was assistant to Professor Hilprecht of the Babylonian Exploration Expedition, sent out by the University of Pennsylvania, to excavate the ancient city of Nippur, in the land where the Garden of Eden was supposed to have been located and in the region where Abraham was born. This expedition succeeded in bringing to light some of the oldest antiquities known. Nippur is the oldest city that has ever been excavated, the foundations having been laid 4000 years before the birth of Abraham. Among the more interesting finds was a drainage pipe made of water jars, which is undoubtedly the oldest example of plumbing known. The bottom of one jar was broken, and into this break the neck of another jar was inserted and plastered with clay, the jars being thus joined one to another after a fashion apparently in common use in Nippur. This prototype of the modern sewer pipe was very crude, but appears to have answered the purpose.

WHEN the question of adaptability for the use of soft coal is brought to the steam fitter, the Gorton & Lidgerwood Company, 96 Liberty street, New York, invite an investigation to their special soft coal Boilers. These Boilers are so constructed that a large quantity of air enters the fire to aid in the consumption of the highly volatile gases which are generated in a soft coal fire. These Boilers are made in a variety of sizes adapted for all characters of work and they have been on the market for several winters, demonstrating their efficiency by satisfactory operation under test.



## ACETYLENE FOR CAR LIGHTING.\*

BY L. T. CANFIELD.

During the last few years a new kind of gas has come into the field as an illuminant—acetylene. Cars equipped with it have burners that consume  $\frac{1}{2}$  cubic foot of gas per hour, and give a light of 25 candle-power, while the Pintsch gas uses a burner that consumes about 2 cubic feet of gas per hour, and gives a light of 25 candle-power. We have several different systems of furnishing acetylene gas for car lighting, some of which generate the gas from a generator applied to each car; others have a generating plant similar to the Pintsch gas plants, where the gas is generated and compressed to as high as 300 pounds per square inch. A method of storing acetylene gas was discovered by two French inventors, who found that one volume of acetone under ordinary temperature and pressure dissolved 25 volumes of acetylene and under 12 atmospheres of pressure would dissolve 300 volumes of acetylene.

In the reservoir for storing this gas the porous bricks, or asbestos, which is sometimes used, is simply for the prevention of explosion. The acetone is for the storing of gas in large quantities in small space, and these two do not enter into the quality or efficiency of the light. The bricks are first made of a mixture of clay and powdered charcoal. The baking of them burns out the charcoal, leaving a porous brick, with which the storage reservoirs are packed. If these bricks were pressed solid, closing up the openings made by the burning out of the charcoal, the solid substance would take up 20 per cent. of the space within the reservoir; 43 per cent. of the reservoir would be filled with acetone, leaving 37 per cent. of the space for expansion. A reservoir 20 inches in diameter by 10 inches long filled as stated above, charged with acetylene gas at 165 pounds per square inch was placed upon a car on the Delaware, Laekawanna & Western Railroad, having four lamps with three burners each and one lamp with one burner. This gas burned a total of 260 consecutive hours and was in service from March 4, 1902, to May 12 of the same year without recharging. The fact of being able to run the car so long without recharging makes this a very desirable light.

Our patrons appear to be quite well pleased with acetylene light. The application of the same is very similar to the application of the Pintsch light and gives less trouble, from the fact that we do not have to fill the reservoirs as frequently. There is one thing, however, that is necessary, and that is to have a successful light, the gas must be kept cool; consequently the pipe leading to the burner, instead of coming down through the center of the lamp, must be brought down on the outside, placing the burner on the end, and above the pipe. I must say that cars equipped with this system are the best lighted we have.

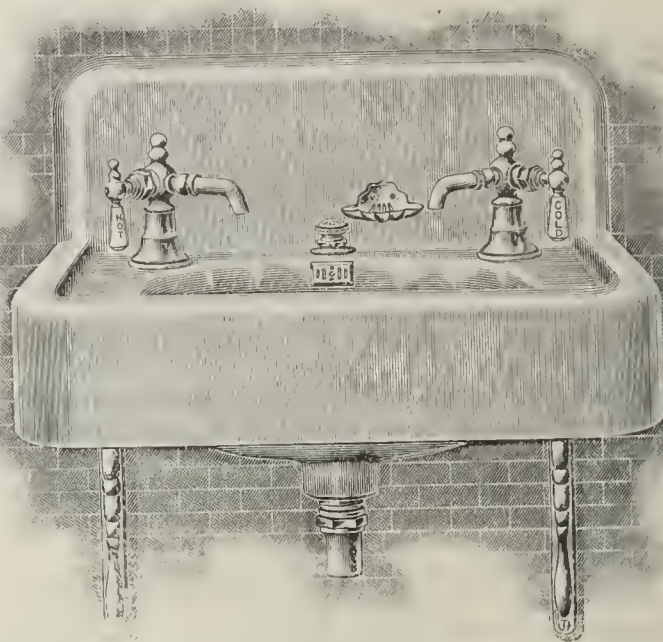
I have had experience with none of the systems that have a generator on each car, and from what I can learn of it I am very much in favor of the system where the gas is generated at a stationary plant, then stored in reservoirs on the cars. There is another system used largely in the Northwest, where the porous brick and acetone is not used, but a large number of reservoirs are used. I am advised that a car with two or three reservoirs has been known to furnish light for cars in a snow blockade for as long as 12 days. To overcome the explosive feature, this system uses fusible seams in tanks and all high pressure pipes under the car are of fusible material, which will fuse at or below 500 degrees F. I have had no experience with this system.

THE BARLOW BROTHERS COMPANY, Waterbury, Conn., are installing the heating plant in the Bunker Hill Schoolhouse in that city and remodeling the ventilating system in the Ridge Street School building. The firm have also been awarded the contract for plumbing and heating a new building to be erected by the Grace Baptist Society.

\* Portion of paper read before the June meeting of the Master Car Builders' Association.

## Apron Pattern Porcelain Enameled Lavatories.

Illustrations are herewith given of new apron pattern porcelain enameled lavatories which have been brought out by the Maryland Foundry Company, A. Weiskittel & Son, proprietors, Baltimore, Md. Fig. 1 is



Apron Pattern Porcelain Enameled Lavatories.—Fig. 1.—Square Lavatory.

a square lavatory and Fig. 2 is a corner pattern. The square lavatory shows the firm's new Roberts waste, which is set with a porcelain index in the handle, making it a handsome waste fitting which can be furnished at a moderate price.

These goods closely resemble solid porcelain ware, but are, of course, much more durable, while the prices are considerably less. Being cast in one piece, they

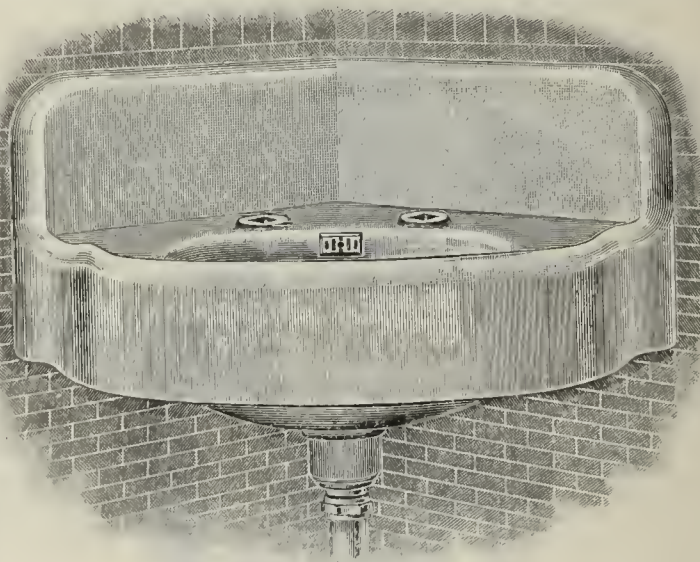


Fig. 2.—Corner Lavatory.

have no joints to open or to collect dirt, making them of the most substantial and sanitary type of fixtures on the market. Architects are freely specifying them for use in some of the finest houses.

## New York City Notes.

Trade conditions have not materially changed. Work on the large buildings down town is booming and is using all the journeymen who want to work on wrought iron pipe. Harlem is very slow, both in new work and overhauling. The East Side is flourishing and nearly all the plumbers there are busy on tenement work. George Dellon has a tenement at Rivington and Allen streets, at 162 East Fourth street and at 211-213 Henry street. Louis Black is plumbing a tenement at 745 and 747 East Sixth street. E. W. Rod one on Thirteenth street, west



of First avenue. J. Lorde one at 345 and 347 East Third street, also at 353 and 355 on the same street, and S. Greenwald is doing one at 336 and 338 East Fourth street. All these tenements are built under the requirements of the new laws and are up to date, as far as inspection goes.

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Engel & McMahon are installing the plumbing and fire lines in the new Miner's Eighth Avenue Theater. J. F. Barry is to do the plumbing in the apartment hotel at the corner of Amsterdam avenue and Seventieth street; also in a row of apartments on East Broadway, from Eighty-fifth to Eighty-sixth streets.

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Among the down town jobs are lofts at 80 and 82 Crosby street, which are being done by T. J. Byrne; the addition to the National Park Bank, at 153-159 Fulton street, and a loft at Bleecker and Mercer streets, which Byrne & Murphy are working on.

## OUTING OF MANHATTAN BRANCH PLUMBERS.

The outing given by Manhattan Branch of the Association of Master Plumbers of New York City at Crocheton's Hotel, Bayside, was the most successful of the popular outings given by them. Although it was, as usual, a "stag" affair, over 150 plumbers and supply men attended. The breakfast was all that could be desired and most of those attending went out in time for that meal.

Following the collation came a series of games. A hard fought baseball match was won by the plumbers over the supply trade by a score of 28 to 24. The old tried and true badger fight was pulled off as usual, the unprejudiced man selected being Michael H. Feran, a friend of P. F. Kenny, on Broadway. Owing to the "high score" made by Pat Kenny the rifle shooting was interrupted by one of the neighboring residents, who complained that bullets were raining around his house. Some very good scores were made, notably 22 by President A. H. Brown; 20, D. F. Magner, G. W. Heiland, H. E. Mulliken, and 19 by A. W. Reynolds, R. F. Mochrie, T. J. Tuomey, F. C. Loeble, E. J. Smith and W. Lockwood. On the shore C. A. Walsh and J. A. Rossman played craps with scores of 11 and 7 respectively. Sam Glauber was successful in making a clean string of goose eggs.

All the houses in the supply trade were represented either in person or by salesmen. Among the guests present were R. W. Rodman, Capt. W. H. Dewar, R. F. Mochrie and J. C. Starck of the Board of Education, G. G. Stillwell of the Highway Bureau, President D. Donegan, John Bosch, W. M. Brown and Ed. Macdonald of Brooklyn, and General G. D. Scott of the Bronx; also Messrs. Heatherton and Ainsworth of the *Plumbers' Trade Journal*.

Frank Reynolds was late to breakfast, having waited an hour and a half for a Bay Shore train to start, and George Schweppenhauser does not mention being carried to the Battery by a West Side elevated express. The greatest mystery of all is, however, what became of Sam Glauber's coat.

WITHIN the covers of a daintily printed pamphlet which is being distributed by the Boynton Furnace Company of New York and Chicago, the subject of "Twentieth Century Heating" is considered in a way to attract more than passing attention. It is a well known fact that the comfort and health of the occupants of a building depend, all things considered, more intimately upon its heating and ventilating arrangements than upon all purely physical appliances, and starting out with this statement the subject matter gradually leads up to the various systems of heating best adapted for the purpose and to the merits of the Boilers manufactured by the company named. There is also presented a list of some of those who are using Boynton Boilers, this being supplemented by the pres-

entation of a few testimonial letters. The printing is in a delicate shade of green and black and the binding is in deep green paper covers with embossed side title in green and old gold.

## Heating and Plumbing Notes.

THE New York Master Plumbers' Association and the New York Local, No. 2, of the National Union of Plumbers and Gas Fitters have entered into an agreement whereby the journeymen plumbers and gas fitters are to receive \$4.25 a day for eight hours' work, with double time for overtime work. The agreement affects about 4000 plumbers and gas fitters.

THE Supervising Architect, Washington, D. C., will receive sealed proposals until September 8 for furnishing the low pressure Steam Heating Apparatus, &c., complete in place for the Hygienic Laboratory of the Marine Hospital Service, Washington, D. C. Plans and specifications may be obtained from the office of the Supervising Architect.

WILLIAM F. WILSON AND JAMES E. BRETT, representing the Master Plumbers' Association of San José, Cal., appeared recently before the local Board of Public Works to enter a protest against the existing system of estimating the expense of side sewers. The board, after a discussion of the matter, requested the master plumbers to submit some plan of procedure.

JOHN H. RUSSELL, a master plumber, of 335 Central avenue, Albany, N. Y., died on August 19, at his residence in that city, at the age of 37 years, from the effects of a dose of strychnine. Mr. Russell had been troubled with heart disease for some time and used strychnine as a relief. It is supposed that on this occasion he had administered to himself too large a dose of the medicine.

THOMAS B. PIERSON, a well-known plumber of Morristown, N. J., died on August 21 at his home at that place after a long illness. Mr. Pierson was born in Mendham in 1832 and had been engaged in the plumbing business since 1868. He served two terms in the Morristown Town Council and was a member of the Masonic fraternity.

THE Metal Polishers', Rubbers', Platers', Brass Workers' and Brass Molders' International Union, representing between 30,000 and 40,000 workmen in the United States, Canada and Mexico, met in session last week at Bridgeport, Conn., and adopted resolutions providing for an organized movement toward a nine-hour work day without decrease in wages. If this demand is not accorded by the employers before a certain day, which will be decided upon later, it is said that a strike will follow.

A. J. BATES & SON, Webster, Mass., have the contract to install new sanitary and ventilating arrangements in the police station in that town.

WELLINGTON & MILLER, Bridgeport, Conn., have been awarded the contract for steam fitting the factory of the Bradley-Smith Company in New Haven. They are also putting in Coil Water Heaters and overhauling the piping in the Atlantic Hotel at Bridgeport.

D. F. KELLY, New Haven, Conn., has the contract for plumbing the new block to be erected on Congress avenue, that city, for the Fahy Estate.

OTTO EPSTEIN is doing the plumbing in six new houses that are being built by Nevels Brothers on Deerfield avenue, Hartford, Conn.

BROWN & WALES, 69-83 Purchase street, Boston, Mass., are sending to the trade circulars of Yager's Soldering Salts, which are put up dry in small bottles to be mixed by the addition of a little water when needed for use. These Salts are said to be free from disagreeable fumes, to leave the metal bright and clean and cause the solder to flow evenly. They are recommended to lead burners, it being claimed that they prevent the clean lead surface from oxidizing in front of the flame of the blow pipe.

For the purpose of acquainting their friends and patrons with their extensive facilities for the manufacture



of Blowers the American Blower Company, Detroit, Mich., are distributing a tasteful little pamphlet containing views of the various departments of their large manufacturing plant, including the heater erecting, pipe cutting, exhaust fan, wheel, blacksmith, pattern, galvanized iron and paint shops, also their storage warehouses, engine and boiler rooms and drafting rooms, together with a bird's-eye view of the entire plant, which give an imposing impression of their magnitude.

BENNETT & DREYER, Camden, N. J., are installing a steam heating system in the Chestnut Street School-house in that city.

C. B. HODGES of Depew, N. Y., has just completed a fine plumbing job for the Railway Steel Spring Company in that town.

THE BUCKEYE STEAM FITTING COMPANY, Cleveland, Ohio, have the contract for installing a hot water heating system in the new residence of Z. D. Patterson in that city.

DAVID F. ANDERSON has begun an action against the Youngstown Heating Company of Youngstown, Ohio, for the purpose of securing from the company \$13,500 worth of stock, which he claims as compensation for services rendered in the organization of the company.

CUFF & Co., Philadelphia, Pa., have been awarded the contract to install a steam heating plant in the new school building of St. Elizabeth's Roman Catholic Church in that city. The work will cost about \$10,000.

MCCARTHY & REID have secured the contract for the heating apparatus for the new Orphan Asylum at Lawrence, Mass.

JOHN W. BUCKLEY, 69 Warren street, New York, has issued a catalogue and price-list of Rubber Goods for mechanical purposes, including Hose, Belting, Packing, Gaskets, Valves, Tubing, &c.

GIBLIN & Co., Utica, N. Y., have issued a fine 28-page catalogue descriptive of their Standard Sectional Steam and Hot Water Boilers, Standard Vertical Boilers and Standard 20 Series Boilers, together with valuable details showing the manner in which greenhouses can be fitted with their appliances to secure satisfactory results. The heating apparatus described in this catalogue has previously been described at some length in connection with other printed matter issued by this firm.

JAMES B. CLOW & SON of Chicago, Ill., have secured a large contract for furnishing Hydrants to the city of Elyria, Ohio. The Hydrant furnished will be the Eddy, on which the bid made was \$24.75 per Hydrant.

THE HERENDEEN MFG. COMPANY, Geneva, N. Y., have issued a neat 24-page pamphlet entitled "Warmth," which deals with various methods of warming houses, but pays special attention to the line of Steam and Hot Water Boilers manufactured by this company.

JUDSON A. GOODRICH, 107 Beekman street, New York, has been appointed sales agent for the Allen Automatic Air Valve manufactured by the Norwall Mfg. Company of Chicago. This Valve was illustrated in the issue of *The Metal Worker* for August 16.

THE ADAMS & JONES COMPANY, 143 High street, Boston, Mass., have issued a most artistic catalogue comprising 64 pages, which treats of the Ideal Steam and Hot Water Boilers, for which they are sales agents. This catalogue enters very thoroughly into the various types of Boilers, comprising the Ideal line, giving full details of their construction and special features.

W. F. BROOKS, plumber, of 1803 Pennsylvania avenue, Knoxville, Tenn., recently met with a serious accident by falling from the first floor to the ground floor of the new Southern Railway passenger station in that city, a distance of about 15 feet, breaking his left hip and sustaining other injuries which will confine him to his bed for some time to come.

THE master plumbers of Spokane, Wash., have asked the local Journeymen Plumbers' Union to rescind their rule regarding a half holiday on Saturday. The employers take the ground that half a day's work is worse than none, and some of them have intimated that unless the men work all day Saturday they will lay them off Fri-

day night until Monday. Committees from the association and the union are at work trying to reach an understanding on the point.

THE additions that the McNab & Harlin Mfg. Company of New York City are making to their plant at Paterson, N. J., include two large structures, a three-story brick storehouse, 50 x 100 feet, and a new three-story shop, 34 x 100 feet. These buildings will be erected between the company's present shops and their foundry. This addition will materially increase the producing capacity of the concern and also the number of their workmen.

THE ROCKMART SLATE COMPANY of Rockmart, Ga., are building a plant for the manufacture of all kinds of Finished Slate for sanitary purposes, Mantels, Stairs, &c. The company own what are known as the Hood quarries near Rockmart, the product of which is claimed to be of unusually high quality. The new plant will be ready for operation early next month.

CHARLES G. DARRACH of Ridley Park, Pa., has received a contract from the University of Pennsylvania to furnish the ventilating and heating system in the new gymnasium attached to the university, which will be erected at a cost of \$450,000.

THE master plumbers of Pittsburgh, Pa., gave an outing on Saturday last at Chester, W. Va. The plumbers and their friends went to Chester in a special train of ten coaches and enjoyed a delightful day's recreation.

THE contract for plumbing and steam heating St. Vincent's Asylum at Twentieth and Race streets, Philadelphia, has been awarded to William H. Doyle of that city.

WALTER PIPS of Austin, B. M. Childress & Co. of Terrell, and Teagarden & Shumate of Austin, were the successful bidders for the supply of plumbing and steam heating goods to the State institutions of Texas for the ensuing year.

THE STANDARD HEATING & ENGINEERING COMPANY of Lancaster, Pa., have secured the contract to install a vapor system of heating in the Court House at Chambersburg, Pa. Mott's Sun Ray Boilers and Radiators will be used in this work. The same company are installing a steam heating plant in the addition to the hospital at Pottsville, Pa., and will use Sun Ray Boilers and Radiators on this job.

It is reported that the Glauber Brass Mfg. Company, Cleveland, Ohio, have recently purchased a tract of  $3\frac{1}{2}$  acres of land, whereon they purpose erecting one of the most modern and completely equipped Brass Goods manufacturing establishments in the United States.

THE trustees of the Providence Hospital, Sandusky, Ohio, have decided to install an approved modern system of heating and ventilating in that institution.

L. S. ALDRICH, Uxbridge, Mass., is installing a steam heating plant in the Uxbridge Town Hall.

CHARLES F. FLYNN, a plumber of Marlboro, Mass., has been convicted, on the complaint of the Board of Health, of doing plumbing work without having secured a renewal of his plumbers' license, of having failed to apply for a permit to do certain work, and of not having tested the same work, according to law, when it was finished. The defendant was fined \$10 on each charge.

M. W. MANWARING, Bridgeport, Conn., has secured the contract for plumbing the new East Washington Avenue Baptist Church in that city.

J. W. CUFF & Co., Philadelphia, will install a steam heating apparatus, costing \$1490, in the East Columbia Avenue Baptist Church in that city.

FRED. ADEE & Co., 90 Beekman street, New York, are sending out a four-page circular devoted to their Cygnet Water Closet and Zenith Valve. The Closet is shown connected with the Zenith Valve for flushing direct from the service pipe. It is also shown connected with an overhead flush tank, designed to be flushed by means of a lever conveniently attached at one side. This Closet has many special features making it well worthy of investigation by the plumbing trade.

J. J. LAWLER & SON of Norfolk, Va., bid \$1300 and secured the contract for plumbing the new High School Building in that city.



FORREST E. WHITECELL of Bethlehem, Pa., is installing a heating and ventilating system in the Quin School Building of 12 rooms, in South Bethlehem, using the Sun Ray Boilers and Radiators.

THE increasing business of the Whitlock Coil Pipe Company, Hartford, Conn., manufacturers of Feed Water Heaters, Condensers, Coils and Bends, makes it necessary for them to double the capacity of their plant, which has been running more or less night and day for a greater part of the last two years. They are planning an addition, about 86 x 135 feet, to their Pipe bending shop, and later on they expect to erect a two-story addition, about 50 x 75 feet, to the Heater shop.

THE City Council of Summit, N. J., are contemplating making a complete and thorough inspection of the drainage, plumbing and other sanitary equipment of every house in the city, with a view of making Summit a perfectly healthy place. Plumbing Inspector Scott believes that the work can be done in about four months.

THE EXETER MACHINE WORKS of Exeter, N. H., have been awarded the contract to install heating plants in the new Stratham power house and car barn, and in the Pelham and Salem power houses and car barns.

ST. JOHN & BARNES, Colorado Springs, Col., have been awarded the contract for plumbing and heating the new Y. M. C. A. Building in that city, at their bid of \$10,428. The Paul system of vacuum heating will be used.

HOFFMAN, BROWN & WILSON of Circleville, Ohio, have secured the contract for the plumbing in the new \$20,000 stone residence of Senator T. W. Marchant, at Washington, Ohio. The firm also have secured the contracts for steam heating and ventilating the new Presbyterian Church at Greenfield, Ohio, and the new Methodist Church in the same town. The two last named jobs will amount to about \$4600.

W. W. LEWIS, Pittston, Pa., has been awarded the contract for the plumbing and steam heating in the new Broad Street Opera House in that city.

THE School Board of Woburn, Mass., have awarded the contract for heating and ventilating apparatus for the Plympton and Lawrence Street School Houses in that town to the Smith & Anthony Company of Boston.

THE MONITOR STEAM GENERATOR MFG. COMPANY, Philadelphia, Pa., will install a hot water heating plant, to cost about \$900, at 5431 Germantown avenue, in that city.

JNO. C. F. TRASCHER, contractor, Philadelphia, Pa., will install a vapor heating plant, to cost \$2000, in the Centenary Methodist Episcopal Church, Forty-first and Spring Garden streets. A similar apparatus costing \$836 will be installed by Mr. Trascher at 3306 Arch street, and a plant of the same kind to cost \$1300 will be placed in the Women's Southern Hospital, 724 Spruce street—all in the city of Philadelphia.

THE COLWELL LEAD COMPANY baseball team won its third successive victory on Saturday last, the Ronalds & Johnson Company team being the losers by a score of 19 to 8. The Colwell team now claims the championship of the plumbing supply trade, which claim they stand ready to defend. Any team in the trade wishing Saturday afternoon games can arrange the same by addressing W. T. Anketell, manager of the Colwell Lead Company Baseball Team, 63 Centre street, New York.

#### New Firms and Changes.

SHAW & McLAUGHLIN are a new firm in the plumbing and gas fitting business at 205 Park street, Hartford, Conn. Both the members of the firm have had many years of experience in the trade, Mr. Shaw having served with Edward Mahl and Mr. McLaughlin with J. Lyon & Sons for a number of years.

STEELE, ANDRE & Co. of West Hartford, Conn., have been succeeded by W. S. Steele in the plumbing, tin-smithing and sheet metal business.

W. J. PULTE of Grand Rapids, Mich., has purchased the plumbing business of George Soule at Billings, Mich. Mr. Soule was one of the oldest tradesmen in Billings and had been in business there ever since the town was organized. He will remove to a fine ranch, which he bought last winter, a few miles west of Billings.

THE NEWMAN MFG. COMPANY of Elizabeth, N. J., have been incorporated with a capital stock of \$5000 by J. W. Newman, Charles Brown and George W. Orphey, to manufacture Steam Specialties.

C. H. NICKEY has opened a plumbing and tinning establishment in the Schauman Block, Anaheim, Cal.

E. F. ULRICH, for many years connected with the Hasley plumbing shop at Anaconda, Mont., has purchased the business and plant of J. W. Dezell at that place, where he will in future be ready to receive and promptly execute all orders in the plumbing and gas fitting line. The business will be conducted under the title of the Ulrich Plumbing Company. Mr. Dezell is retiring from business.

SAPP HARDWARE COMPANY are successors to A. W. Lee in the Steam Fittings, Hardware and Mill Supply business in Cairo, Ga.

THE plumbing and steam fitting firm of James D. McEntee & Co. of New York City, have been incorporated with a capital stock of \$30,000. The directors are Rennie Stich, Thomas Wall and John Shay, all of New York City.

#### New Publication.

**The Municipal Year Book.** Published by the Engineering News Publishing Company, New York. Pages, 310. Price, \$3.

This publication, which is edited by M. N. Baker, associate editor of the *Engineering News*, is the first issue by the publishers of a work of this character. It is designed for the use of all persons desiring information relative to the various municipalities throughout the United States. It is, of course, particularly interesting to contractors, but will be found of value to many others. It gives the population, assessed valuation, names of principal officials, ownership of public utilities and information regarding water supply, sewerage, street cleaning, street sprinkling, garbage, fire and underground electric service in all incorporated places in the United States and in all New England towns of 3000 population and upward by the census of 1900. It is claimed that never before has so complete an exhibit of the relative extent of municipal and private ownership been presented. This information is first given alphabetically by States, together with the other facts relating to the various cities and towns. It is next presented alone in compact tabular form with the cities arranged in order of population. The book is based on special returns, made with a very few exceptions by the city officials of the several places included. The statement is made that formal reports were secured from all but five or six of the 1524 cities and towns included. This shows the great interest taken in the project.

This volume shows that the town dweller of to-day, even though he lives in a small community, has at his command a wonderful number and variety of public services. Of the 1524 places of 3000 population and upward, by the census of 1900, at least 1475 had water works, 1471 electric lights, 1466 telephones, 1096 sewers for household wastes, 981 gas works and 928 street railway systems. In other words, only some 50, or about 3 per cent. of these 1524 places, are without water works, electric lights and telephones, a little over 400 without sanitary sewers and 500 to 600 without gas works and electric railways.

Eight cities having 20,000 population and over are still without sanitary sewerage systems as follows: Baltimore, Md., 508,957; New Orleans, La., 287,104; Allentown, Pa., 35,416; Topeka, Kan., 33,608; Gloucester, Mass., 26,121; Warwick, R. I., 21,316; Columbia, S. C., 21,108; Shenandoah, Pa., 20,321.

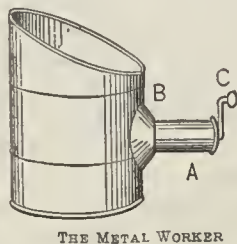
The constant increase in the number of water purification plants in the United States is one of several indications that municipal health problems are at last beginning to receive something like adequate attention in the more progressive communities of the country. The returns show 243 cities which can be classified under some one of the various methods in vogue for improving the quality of public water supplies. In addition 68 places merely reported that their water was filtered.



## PATTERNS FOR FLOUR SIFTER.

(Without allowance for laps.)

In Fig. 1 is shown a finished view of a flour sifter, usually made from 10 bright tin plate. The handle A, which is fastened to the body, is further strengthened



THE METAL WORKER

Patterns for Flour Sifter.—Fig. 1.—Perspective View of Flour Sifter.

by the conical boss B. C shows the wire handle which operates the beaters when the flour is to be sifted through the wire cloth sack on the inside of the body, which will be explained as we proceed. Knowing the size of the sifter, first draw the elevation of the body

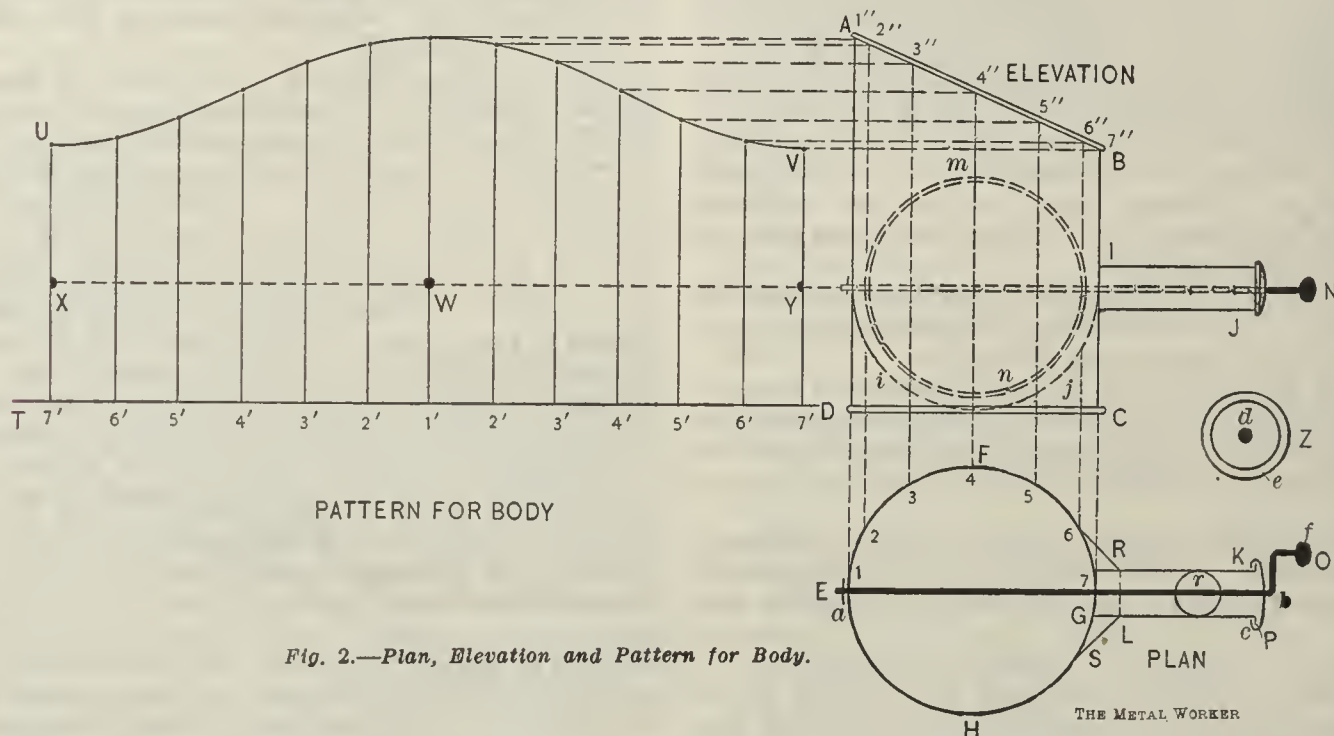


Fig. 2.—Plan, Elevation and Pattern for Body.

of the sifter, as shown by A B C D in Fig. 2. Directly below it, in its proper position, draw the plan, as shown by E F G H. Midway between B and C in the elevation draw the handle I J, shown in plan by K L. Now draw M N in elevation, which represents the wire handle, made from  $\frac{1}{8}$ -inch thick wire, which passes through the button on the end of the handle and through the two sides of the body, as shown. The wire handle is shown in plan by O E, and is fastened in position by the washers at a and b. A small knob fastened to the end of the wire handle is shown at f, while P shows the button double seamed to the tin handle at c, and R S the conical boss between the handle and the body.

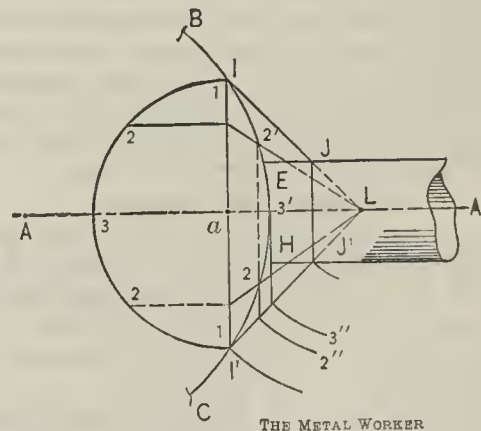
As both halves of the body are symmetrical, then divide the half plan E F G into an equal number of spaces, as shown by the small figures 1 to 7, from which erect vertical lines intersecting the top and bottom of the body in elevation, as shown. In line with C D draw the line D T, upon which place twice the number of spaces contained in the half plan, as shown by similar figures on D T. At right angles to D T and from these small figures draw lines, which intersect with lines drawn from similar numbers on A B at right angles to A D. Trace a line through the points thus obtained. Then will U V D T be the pattern for the body of the sifter. It will be noticed that the pattern is obtained below and above the wire lines on top and bottom of the body respectively, and for that reason allowance must be made to the net pattern shown. The small dots X, W, Y represent small holes to be punched into

the pattern to admit the wire handle N M, and are obtained by projecting a line from M, intersecting the center and ends of the pattern as shown.

While the pattern for the handle K L in plan or I J in elevation presents a problem of two cylinders of unequal diameters intersecting each other at a right angle, we will assume that 7 G in plan is a plane surface and make the pattern in length equal to K 7 and in width equal to the circumference of the circle r, to which laps must be allowed for soldering. This pattern will answer for all practical purposes where the body is of large and the hand of so small a diameter.

The pattern for the button P is shown at Z, d representing the hole punched to admit the wire handle, and e the edge to the double seam on the handle K L at c. For the pattern for the conical boss, R S, joining the round body of the sifter, proceed as is shown in Fig. 3, which is an enlarged view to clearly show each step taken. First draw the center line A A', and from A as center draw a portion of the body, as shown by B C. Then draw a portion of the handle E F G H and establish at pleasure the pitch at the boss I J and I' J'. Extend these lines, intersecting the center line A A' at L. Draw a line from I to I', intersecting the center

line at a. Then, using a as center and a I as radius, describe the half section of the boss on the line I I', as shown by 1 3 1. Divide this half section into equal spaces, as shown by the small figures 1, 2, 3, 2, 1, from which points, at right angles to 1 1, draw lines inter-



THE METAL WORKER

Fig. 3.—Enlarged View of Boss.

secting the base lines 1 1, as shown. From these points draw lines to the apex L, intersecting the body of the sifter B C at 1, 2', 3', 2', 1. From these intersections, at right angles to the center line A A', draw lines intersecting the side of the boss at 1 2'' 3''. Now, with radius equal to L I, and L in Fig. 4 as center, describe



the arc  $1\ 1''$ , upon which place the stretchout of twice the number of spaces contained in the half section  $1\ 3\ 1$  in Fig. 3, as shown, by similar number on  $1\ 1''$  in Fig. 4. From these points draw radial lines to the center  $L$ , as shown. Now, with radii equal to  $L\ 2''$  and  $L\ 3''$  in Fig. 3, and with  $L$  in Fig. 4 as center, draw arcs intersecting radial lines having similar numbers, as shown by the intersections  $2^\circ, 3^\circ, 2^\circ, 2^\circ, 3^\circ, 2^\circ$ . In a similar manner, with radius equal to  $L\ J'$  in Fig. 3 and  $L$  in Fig. 4 as center, draw the arc  $J\ J'$ , intersecting the ra-

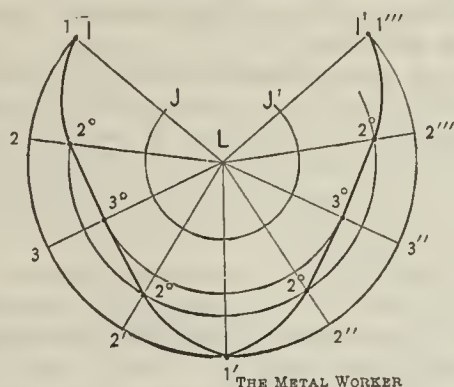


Fig. 4.—Pattern for Conical Boss.

dial lines drawn from  $1$  and  $1''$ . Trace a line through the points thus obtained; then will  $1\ 1'\ 1''\ J'\ J$  be the pattern for the conical boss.

In Fig. 5 is shown the construction of the beater and wire cloth sack.  $A\ B\ C\ D$  represents the sectional view of the body with a bead turned out at  $D$  and  $E$ . The bead  $E$  should be placed at a distance from the bottom equal to the half diameter of the body. A circle of fine wire cloth is now cut equal in diameter to the stretchout of the half circle  $b\ F\ a$ , and then formed into the shape of a half sphere with an edge turned out slightly at the top, as shown at  $a$  and  $b$ , and tacked with solder around the bead  $E$ . Two strips of tin are now edged or beaded, as shown at  $M$  or  $L$  respectively (which is full size) and equal in length to the circumference of the circle  $d\ e$  (which is slightly smaller

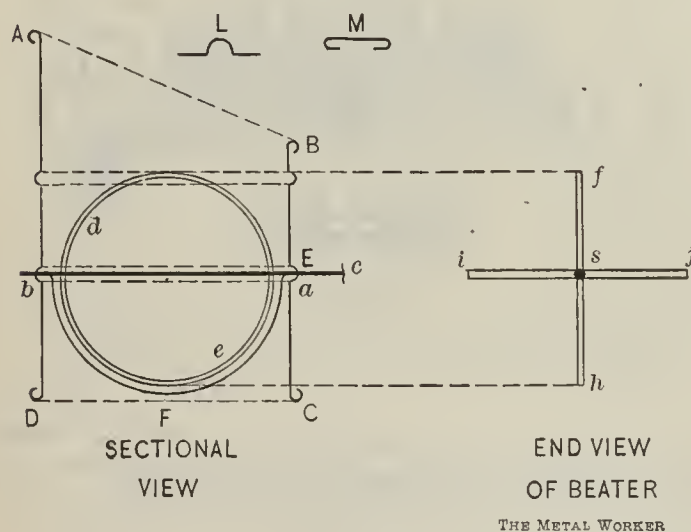


Fig. 5.—End and Sectional Views.

than the half sphere  $F$ , to allow it to turn easily), and rolled up and soldered. Then the two rings are joined together at right angles to each other, as shown in the end view of beater at  $h\ f$  and  $i\ j$ . A hole is punched through the center, as shown at  $s$ , to admit the wire handle. The ring beaters are now placed in the body, as shown by  $d\ e$ , and the handle  $c$  passed through the tin handle, body and rings. Then the rings are soldered firmly to the tinned wire and the washers soldered to the handle on the outside, when the beater is ready for use. If the sifter is of large size, three or four rings can be used for the beater.

THE LAUGHLIN NAIL COMPANY, Martin's Ferry, Ohio, are installing new engines to run their eight Tin mills.

## NEW YORK SHEET METAL WORKERS' WAGES.

The threatened labor troubles in the metal roofing and sheet metal working industry in New York City and vicinity appear likely to be averted. According to present indications, the demands of the Cornice, Skylight and Sheet Metal Workers' Union for a wage of \$4 a day of eight hours, after September 1, with a half holiday on Saturday all the year round, without pay, will probably be granted by the Employers' Association. Some of the employers who are not members of the association have already signed the agreement. The union requires all employees on cornice, skylight and sheet metal work to become members of their organization, with the exception of one foreman in each shop, who is allowed to be a nonunion man. The only obstacle at present in the way of a general settlement is a difference between the Cornice, Skylight and Sheet Metal Workers' Union and the Tin and Metal Roofers' Union—two separate organizations—as to which body are to apply corrugated iron siding above and below the eave lines of the roof. The cornice makers claim that the work belongs to them, while the roofers contend that it is a covering job, whether on the top or side of a building. It is regarded as probable, however, that the two unions will settle this matter between themselves, or that they will agree to leave it to the discretion of the employers to decide to whom they prefer to give this work. The sum of \$4 a day is good wages, for which employers are entitled to the services of good workmen. The advance in wages will naturally create a tendency on the part of employers to weed out the middle or poorer class of workman, and obtain in his place a first-class mechanic. As the union makes no distinction in pay between a good and a bad workman, the result in the future will be that the inferior mechanic will be the loser in the number of day's wages earned a year, while the first-class mechanic will have steady employment with everything to gain.

## Death of Charles H. Curtis

The trade will regret to learn of the death of Charles H. Curtis, vice-president of the J. M. & L. A. Osborn Company, Cleveland, Ohio, and a prominent business man of that city. Mr. Curtis' death occurred on August 25, at his residence, 58 Fourth avenue, Cleveland, as the result of an attack of smallpox of the most virulent type, which carried him off after three days' illness. Mr. Curtis was 40 years of age, and was formerly a resident of Niles, Ohio, where he did business for many years under the style of the Curtis Roofing Company. Subsequently he was connected with the Curtis Sheet Steel & Corrugating Company of Zanesville, Ohio, and removed to Cleveland about four months ago to assume the position of vice-president of the J. M. & L. A. Osborn Company. Mr. Curtis was highly esteemed by a large circle of friends, both in and out of business, and was regarded as a broad minded, upright business man of excellent judgment and capacity. He was a member of the Epworth Memorial Methodist Church of Cleveland. Mr. Curtis leaves a widow, two sons and one daughter.

## The E. W. Bliss Company.

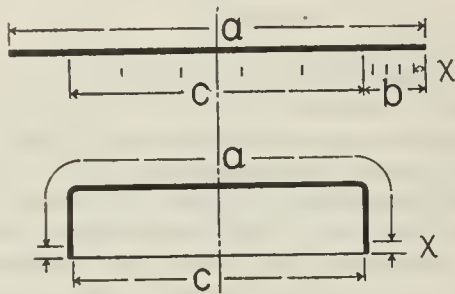
The E. W. Bliss Company and the United States Projectile Company, both of Brooklyn, N. Y., have been consolidated, and will in the future be controlled by the same officers. Heretofore the two companies, while distinct and independent, have been owned by practically the same men. The Bliss Company are the largest manufacturers in the world of presses, dies and special machinery for working metal. They also make the Whitehead submarine torpedo for the United States Government. The Projectile Company manufacture the well-known "Projectile" brand of pressed steel gears and pinions, together with their regular line of projectiles. During the past year they have been compelled to double the capacity of their works and are even now contemplating important additions in order to enable them to keep up with the increasing demand for their



products. Hereafter this plant will be known as the E. W. Bliss Company, Projectile Department. The Bliss Company are capitalized at \$2,000,000, \$1,000,000 of which is common and \$1,000,000 preferred stock. The Projectile Company are capitalized at \$500,000, all common stock.

### A COMBINATION DIE.

While the boilermaker frequently flanges a pair of heads by hand and the tinner occasionally makes a few ends in a hand burring machine, says John D. Riggs in *Ryerson's Monthly*, the sheet metal manufacturer who



A Combination Die.—Fig. 1.—Round Blank and End Made from Blank.

makes articles in large quantities finds that such work can be done cheaper and better in dies.

In turning a flange around a head or an end the material is forced from a larger to a smaller diameter and this surplus stock must be worked in somewhere, either in making the flange thicker or in making it deeper. In making ends in dies it is common to keep the thickness nearly uniform and to draw the surplus stock to the edge, thus making the flange deeper than the width of the ring from which it is made.

In making dies it is often necessary to know how deep a flange will draw from a certain blank. In Fig. 1 the upper part represents a round blank and the lower part an end made from this blank. If we represent the diameter of the blank by  $a$  and the inside diameter of the end by  $c$ , then  $b$  will be half the difference between  $a$  and  $c$ , while  $x$  will represent the increase in the depth of the end. To find  $x$  we may solve the proportion:

$$c : b :: b : x$$

Or when we have a drawing we may use the following rule: Take  $b$  in the compasses and step off  $c$ , then divide  $b$  into the same number of steps and one of these whole steps will be  $x$ . Add  $x$  around the edge and we have the depth of the finished piece.

In Fig. 1  $b$  is contained in  $c$  about four and three-quarter times, so  $x$  is contained in  $b$  four and three-quarter times. This rule assumes that the thickness of the flange will be the same as that of the blank, but when it is from 2 to 5 per cent. thinner it will be proportionately deeper.

A die for the combined operations of cutting and forming ends 1 foot in diameter or less may be made as shown in Fig. 2. The four dimensions  $n$ ,  $h$ ,  $d$  and  $b$  will be determined by the press that the die is to be used in and by the end that is to be made, but some of the other details may be varied somewhat to suit the conditions.

The punch or upper part is often made by welding a tool steel ring onto a wrought iron or machine steel body. In small work the entire punch may be made of tool steel, or when the cutting edge of the punch does not require to be hardened the steel ring may be brazed on and a higher quality of tool steel used than when welding is resorted to. The central plate riveted onto a stem fits loosely and pushes the finished piece out of the punch, either by the end of the stem striking a stationary "knockout" in the press or by means of three or four coil springs set into pockets drilled for them, as shown.

The die proper is sometimes made by welding a tool steel ring onto a large wrought iron plate, but is more often made by carefully fitting a hardened and ground

steel ring onto a cast iron plate or base, and fastening it with screws. These screws may pass directly through the hardened steel ring, or, better, through an outside cast iron ring, as shown. The cast iron center of the die may have a hardened steel ring, as shown, when it is necessary to make a large number of ends to a standard size, or a steel face when letters or ornaments are made on the work. The drawing ring is held up by means of a rubber (or steel) spring through four or more pins, as shown, and clamps the blank against the face of the punch after it is cut out and until the forming is completed. As the punch returns on the up stroke, this drawing ring strips the work upward and off from the die center.

The rubber spring should be quite long, so that the tension on the work will be nearly uniform during the drawing operation. For flanges  $\frac{1}{4}$  inch deep a spring 5 inches long will answer, but for a flange 1 inch deep a spring 1 foot long or more will be necessary. The nut on the lower end of the stud bolt serves to adjust the tension of the spring.

Two gauges are commonly used, similar to the one shown, but not often on the right hand side; one on the back and one on the left side is a more common arrangement. A stripper of some sort is often used to pull the scrap off from the punch, but this may be dispensed with when working thin stock with the gauges set in close to the punch.

Small work can be made quite rapidly in a press with a die of this class, and a large order is often completed in a very few days. A day's work often runs to over 10,000 pieces, and, in some exceptional cases, to more than double this number.

Dies similar to the one illustrated are often made

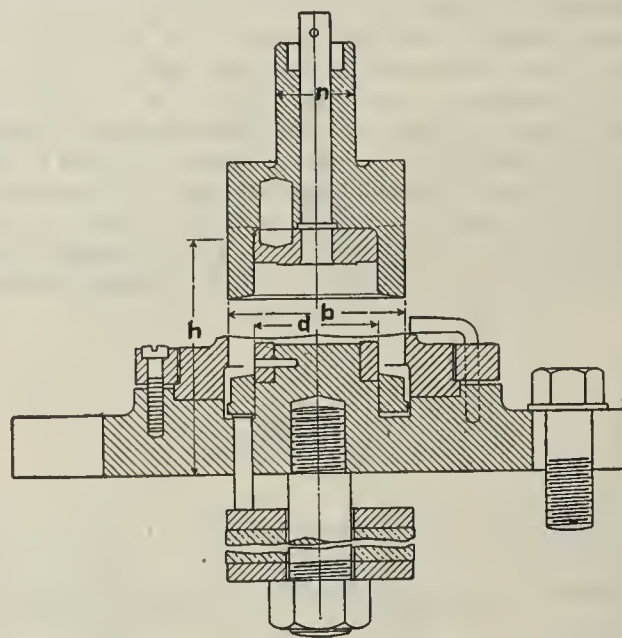


Fig. 2.—A Combination Die for Cutting and Forming.

for work which is not round, such as meat can ends with straight sides and a small round corner, and in stove work, with straight sides and round ends.

### Tectorium.

Tectorium, a new building material of German invention, is described by a contemporary as consisting of a galvanized wire web, which is covered with a peculiarly prepared mass, the ingredients of which are a secret of the inventor. This article, while it allows the light to penetrate, breaks the rays of the sun and in this way prevents an uninterrupted view into the place. Tectorium is tough and yet pliant, can be bent in any desired shape and is insoluble in water.

On account of its light weight it is well adapted to light roofing purposes, and is also weather proof. A whole roof covered with Tectorium presents a very handsome appearance. It can easily be cut with shears and be nailed on strips of wood, window casings, &c. It can also be repaired without trouble, in case a hole is



punched through it by accident. It is cheaper than glass, as it is unbreakable, and can be used with great success for factory windows, skylight, hothouse lights, verandas, transoms, &c., and is manufactured by Gustav Tickhardt, Bonn, Germany.

### The Late John Henry

The death of John Henry, the former head of the Chartiers Iron & Steel Company of Carnegie, Pa., which was briefly referred to in our last issue, removes a prominent figure from the iron and steel manufacturing industry of the Pittsburgh district. Mr. Henry died on August 16 at the Mercy Hospital, Pittsburgh, as the result of injuries sustained by being run down by a train on the Pan Handle Railroad on the previous night. He was born at Port Talbot, South Wales, 60 years ago, and came to this country in 1866, settling in Pittsburgh. He found employment as roller in some of the Pittsburgh iron mills, subsequently going to Apollo, where he remained for nine years in the sheet iron works, thoroughly acquainting himself with the industry. In 1877, he returned to Pittsburgh and for a time was a roller in the Moorehead, McCleane & Co.'s mills in Soho. From that place he went to Ironton, Ohio; Cincinnati and Cleveland, returning to Pittsburgh in 1884, when he organized the Chartiers Iron & Steel Company, with works at Carnegie, Pa. For 18 years he remained at the head of that concern and established a high reputation as a manufacturer of high grade sheet steel. In 1900 the Chartiers plant was absorbed by the American Sheet Steel Company, and Mr. Henry retired from its management. Since that time, however, he had acted in an advisory capacity for the American Sheet Steel Company. Mr. Henry was married in 1882 to Miss Jennie Petticord of Cambridge, Ohio, and leaves four children. He made his home in the suburb of Glendale.

### A Large Copper Contract.

J. H. Jolley & Co., 42 North Fifth street, Philadelphia, Pa., advise us that they have just completed delivery to the League Island Navy Yard, Philadelphia, of all the sheet copper and composition sheathing nails necessary for sheathing the United States cruiser "Denver," the first of the Government steel vessels to be sheathed with copper. The work required 1462 sheets of 30-ounce, 1972 sheets of 28-ounce, and 1525 sheets of 26-ounce soft sheet copper, 14 x 48 inches in size, the whole having a weight of 40,438½ pounds. There were also supplied 60 pounds of composition cut nails, 1½ inches long, and 4800 pounds of nails, 1¼ inches long, having a total weight of 4860 pounds. The contract was awarded to the firm on August 8 and delivery of the material was completed on August 20. In addition to the "Denver," the steel cruisers "Chattanooga," "Galveston" and "Cleveland" are to be copper sheathed as soon as ready. J. H. Jolley & Co. are agents for the Taunton-New Bedford Copper Company, and also for the Randolph & Clowes Company, manufacturers of seamless brass copper tubes.

### The Vulcan Detinning Company.

In response to requests for information as to their affairs, the Vulcan Detinning Company of New Jersey with reduction plants at Sewaren, N. J., and Streator, Ill., have sent the following circular to their stockholders:

The products of our mills are "merchantable pig tin" and "steel scrap" (used by steel mills), which we convert from tin plate waste produced by tinware and can manufacturers. There is a ready market for both products at all times. Our output is contracted ahead for the balance of this year and partly into next year.

The result of our business from April 1 to July 1, 1902, the first quarter under the new consolidation, is as follows: Earnings after payment, of operating expenses, \$76,954; less for betterments and maintenance, \$7653; net earnings, \$69,271; dividends paid, 1¼ per cent. for three months, \$1,500,000 preferred stock, \$26,250; dividend paid, 1 per cent. for three months, \$2,000,000 common stock, \$20,000; total, \$46,250; carried forward to reserve fund, \$23,021. Before consolidation the net

earnings of the two companies which comprise the present company for the same period in 1901 were \$41,258.

By these figures you will observe that the results shown after consolidation are very gratifying, and judging from present conditions of trade, there is every prospect of a continuance of improvement. The stocks, both common and preferred, are at present dealt in on the "curb," and in due time it is the intention of the company to make application to have them listed on the New York Stock Exchange.

### FLASHINGS.

THE Elwood, Ind., plant of the American Tin Plate Company, which has 26 mills, was closed down indefinitely last week, also the company's six-mill Humbert plant at South Connellsville, Pa. It is claimed that less than 20 of the union mills of the company, out of a total of about 200, are now in operation. Seventy-four non-union mills controlled by the company are reported to be running full. About 2000 employees are thrown out of work by the closing down of the Elwood plant.

JOHN BYRD of Philadelphia, Pa., has taken contracts for the copper work on the front of the building at 1510 Chestnut street; for the slate and metal work on the new signal tower for the Pennsylvania Railroad at Thirty-third street and Pennsylvania avenue, that city, and for 10,000 square feet of tile and copper roofing, with ventilators, for the new United States Post Office now in process of erection at New Brunswick, N. J.

THE NEW JERSEY GALVANIZING & TINNING WORKS of Newark, N. J., recently incorporated, are erecting a modern plant for the manufacture of Galvanized and Tinned Sheets.

Two new sets of cold rolls are being installed in the Midland plant of the American Sheet Steel Company at Muncie, Ind. The entire plant has recently been remodeled and put in first-class condition at a cost of about \$25,000.

THE WALTER J. SCULLY VENTILATOR COMPANY of Detroit, Mich., have been incorporated with a paid in capital stock of \$150,000, by Walter J. Scully and James N. Teahan of Detroit and William Delano of Grand Rapids.

THE first press message to the outside world by wire from Valdes, Alaska, received a few days ago over the recently completed telegraph line, reports that Robert Blei, an expert, sent into the Nazine silver district, has just reached Valdes and reports that the Nazine district has the richest mines in Alaska. Mr. Blei reports the discovery of immense deposits of Tin near Mount Wrangel, 150 miles distant from there. Should this report be substantiated it is likely that a railroad will be built to the district at the earliest possible opportunity.

J. R. DAVIES, manager of the Cwmfelin Steel & Tin Plate Company, Limited, of Swansea, Wales, is at present in the mining district about Birmingham, Ala., and it is reported that he may establish a plant in that district. Mr. Davies is visiting the different steel and rolling mills and investigating their products.

THE AMERICAN SHEET STEEL COMPANY have bought a large tract of land adjoining the W. Dewees Wood plant, at McKeesport, Pa., upon which they purpose to erect a large addition to the plant.

Two pots in the galvanizing department of the Youngstown Iron, Sheet & Tube Company, Youngstown, Ohio, were placed in operation last week. The entire plant is expected to be in full running order within a short time.

THE DAVID LUPTON'S SONS COMPANY of Philadelphia, who recently succeeded the old firm of David Lupton's Sons, are enlarging their manufacturing plant, which already covers 4 acres.

LENTZ & OPEL of Sherman, Texas, manufacturers of Architectural Sheet Metal Work, Roofing, Guttering, Tanks, &c., are reported to be doing a large business in their line. They bought the tin shop of the Roberts, Sanford & Taylor Company last May, and have materially increased the business since. The firm make all kinds of Metal Tanks for water and oil. Both of the proprietors are practical workmen of long experience.

THE plant of the Ashland Sheet Steel Company, Ash-



land, Ky., at which a strike was declared some time ago owing to the refusal of the company to sign the Amalgamated Association wage scale, although offering to pay the scale wages, has been declared off, and the mill has resumed operations in full.

F. H. SNEATH, Hartford, Conn., has contracts for the slate roofing in connection with the additions to the factory of the Pratt & Cady Company, and the Capewell Horse Nail Company in that city. He is also doing the slating on the chapel at Cedar Hill Cemetery and on Christ Church, both in Hartford, as well as on St. Mary's Church and a building for Landers, Frary & Clark, in New Britain.

THE AMERICAN ROLLING MILL CORPORATION, with mills at Muncie, Ind., Muskegon, Mich., and Sandwich, Ill., have purchased the Continental Chain Company, whose works are located at East Chicago.

THE organization of the Empire Iron & Steel Company, who are building a Sheet plant at Niles, Ohio, has been completed by the election of the following officers: Wade A. Taylor, president and treasurer; Charles S. Thomas, vice-president and manager, and Jno. F. Odea, secretary.

E. I. LEIGHTON, formerly with the Cleveland Punch & Shear Works, Cleveland, Ohio, has been elected general manager of the Cleveland Machine & Mfg. Company, and will manage the affairs of the company.

THE BROOKLYN METAL CEILING COMPANY, 283-287 Greene avenue, Brooklyn, N. Y., advise us that they have recently completed some unusually large contracts for Metal Cellings and Side Walls. Among their biggest jobs are the interior covering of A. D. Matthews & Sons' addition on Smith street, Brooklyn, as well as 100,000 square feet of Metal Ceiling in the company's original store; also the large dry goods store of John Daniel & Son, at 763 Broadway, the Methodist Episcopal Church at Dekalb and Bushwick avenues and the Building Commissioners' office in the Borough Hall, Brooklyn; also the walls and ceilings of the entire building recently put up by J. Kuntz & Sons, at Smith and Wyckoff streets, Brooklyn.

GEORGE CALLAHAN & Co., 218 Front street, New York, have just received another order from the Government for their Elastic Water Proof Rubber Roof Cement. This tends to prove the truth of the company's contention that wherever their Cement has been tried it has been followed by a second order. The concern have established an enviable reputation on both their Rubber Roof Cement and Steam Joint Cement in the 15 years during which they have been making these goods. They will be pleased to send free samples to any one desiring them.

### TRADE NOTES.

THE WHALEY-TOTTEN COMPANY, 940 Ellicott square, Buffalo, N. Y., advise us that they have submitted their Totten Compound for soldering Aluminum to the Pittsburgh Reduction Company for experiment and test. They have been advised by that company that the Compound has been submitted to various tests, with the result that it has demonstrated its superiority over any materials they have yet tested, possessing qualities which give it a decided advantage over any Aluminum Solder so far submitted. The Pittsburgh Reduction Company will make further experiments with the Compound, which the manufacturers are satisfied will increasingly demonstrate its value as a medium for soldering Aluminum. The manufacturers state that they are meeting most flattering success in the marketing of Totten Compound, and that the cases where a trial of the Compound does not result in sales are very rare.

THE G. W. BOND COMPANY, manufacturers of Brass, Composition and Aluminum Castings and Wares, have purchased a site at Waltham, Mass., and will begin the erection of a large factory.

THE WOLVERINE BRASS COMPANY, Grand Rapids, Mich., are erecting a new Brass foundry.

THE annual report of the National Enameling & Stamping Company of New York, presented last week, showed that after deducting everything in the nature of operating expenses there was left a profit of \$2,566,817.

From this was deducted the salaries of the officers, directors, &c., amounting to \$106,908, interest amounting to \$13,515 and a depreciation footing up \$457,875, leaving a net profit of \$1,988,428. Deducting from this sum \$107,593 interest, \$1,780,835 was left available for dividends.

IRVING W. FOX, Rochester, Minn., manufacturer of the Rochester and Clipper Wood Saws and Tornado Tank Pumps, is erecting a new shop, which will be double the size of his former building.

OHIO WRINGER & LAWN MOWER COMPANY, Springfield, Ohio, have been succeeded by the Ohio Wringer Company, who have just been incorporated with a capital stock of \$15,000. The officers of the new company are George D. Leedle, president; M. R. Harris, vice-president and treasurer, and C. C. Leedle, secretary. George D. Leedle will be superintendent and general manager of the concern, and Mr. Harris will have charge of sales. The company will discontinue the manufacture of Lawn Mowers and will hereafter devote themselves entirely to making Wringers.

HIGH Grade Porcelain Enameling is the specialty of the John Peil Enameling Works, Columbus, Ohio. The concern are prepared to do all kinds of enameling in every variety of color. Their Enamel is described as very hard and tough, and well adapted for application to stamped steel kitchen sinks, steel refrigerator linings, lamp shades and tops, and also for gas and other stoves.

### Successful Scheme of Ventilation at Sheffield, England.

The following description of a method of cleaning soot laden air, taken from the *Ironmonger* of London, will be of interest to many in New York City if the coal strike continues or if, after it is over, some energy is not expended by the authorities to induce a return to anthracite coal:

The Sheffield Engineers, Limited, of Wellington Works, Sheffield, have just completed an elaborate arrangement of ventilation for the National Telephone Company in Sheffield. The many works surrounding the telephone exchange discharge so much smoke and soot into the atmosphere that it has been found impossible to open the windows of the building even on the hottest day, and consequently the ladies employed in the switch room suffer considerable discomfort and some injury to health. When the heat was excessive the frequent cases of fainting seriously disturbed the working of the exchange. To meet the special difficulties attending the ventilation of the building a number of firms were invited to submit proposals, and that of the Sheffield Engineers, Limited, being adopted, the work has been carried out by them to the satisfaction of all concerned. The air is drawn into the room through a coke screen, which clears it of soot and dirt. The screen is kept moist and it is possible to regulate to a certain extent the amount of moisture entering the room. After it has passed through the screen, and before entering the room, the air can be taken to an arrangement of radiators to enable the temperature to be regulated as desired. The air then passes along a long air shaft running along one end of the room and thence into the apartment through a series of small gratings fixed at intervals along this shaft, which is so shaped that the velocity of the air is practically the same at all the outlets, no draft being perceptible in any part of the room. The windows will be kept closed, and the only outlet being at the opposite end of the room the air introduced must travel through every part of it before escaping.

Consul-General J. P. Bray reports that an International Exposition of Arts, Sciences and Industries will be held in Melbourne, Australia, during November and December, 1902, and January, 1903. It will be conducted by private enterprise. All communications as to space, &c., should be addressed to John A. Joubert, secretary of the Australian Federal International Exposition, 229 Collins street, Melbourne, Victoria.



## THE LETTER BOX.

*Inquiries in regard to practical questions of general interest are invited, in reply to which we shall be glad to receive suggestions and information from our readers.*

*Correspondents are requested in all cases to give their names and addresses, which will not, however, be published or disclosed without their consent.*

### FUEL OIL BURNERS.

From F. E. H., Dover, N. H.—I notice in *The Metal Worker* of August 23 that you desire information in regard to fuel oil burners for use in kitchen stoves, &c. I have had a little experience with such burners and am glad to give your readers the benefit of the same. In the first place there is no burner now on the market, to my knowledge, that is practical. There are two styles, for which the manufacturers make great claims; but these claims are not found to hold good on a fair trial. The main objections are: 1, exorbitant price; 2, the stove is soon filled up with heavy soot, notwithstanding the makers' claim of "no dirt;" 3, the burner burns out after a few months' use; 4, they consume fully three times the amount of oil that the makers estimate; 5, the fire is apt to "puff" and not burn steadily, without any apparent cause; 6, the fire cannot be regulated; you must either have a full fire or none at all. In my opinion, the oil burners would be far more practical if they were made in one piece, like a water front, and had an inlet at the top, instead of taking the air up through the fire.

The above applies to the style of burner which is placed in the fire box of a stove. The other style, which is set in place of the range covers, is a "fake." That is, it is sold on a fake plan. Two or three men will rent a vacant store, place a carefully constructed burner in operation and advertise the fact, inviting the public to see the wonderful invention. In the meantime they are on the lookout for some one to take the agency for several counties. The prospective agent must buy several hundred burners to begin with and pay cash for them. This accomplished, the promoters jump into another State. In the meantime the burners arrive and are found to be very poorly constructed and fail to work properly. The agent must then nurse his wrath and his pocketbook.

### QUESTIONS FOR PLUMBERS.

From F. C., New York.—Having read the letter of "D. & E." of Jackson, Miss., in *The Metal Worker* of August 23, I venture to give the following opinion in reference to their question. In New York City the trap and vent cover as shown would not be allowed, as it would conflict with the plumbing regulations. This, however, by no means condemns the trap. Drum traps with the clean out covers at the top are quite generally used throughout the country. In my opinion not enough of the rankest form of sewer gas could escape through the screw joint of either cover or the coupling to undermine the most delicate constitution. This is a feature that would be considered a weak point in the trap construction. From the fact that drum traps are so generally used it is more than probable that the new form will be accepted by many of the plumbers as an improvement, for if it does not leak water there will be very little chance for the gas or foul air to get through the screw joints, particularly when the trap is ventilated.

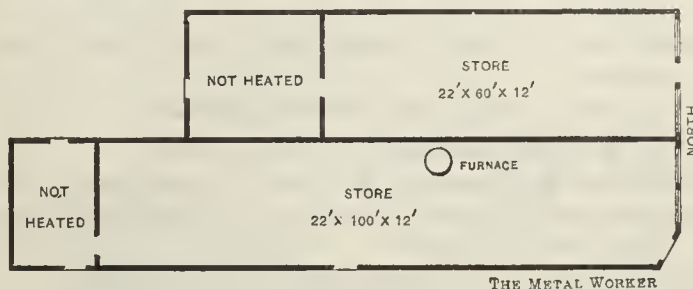
### BOILER TOO LOW.

From J. E., Brooklyn, N. Y.—In regard to the letter of "B. K. M." in *The Metal Worker* of August 2, referring to noise in boiler, I would say that I have had this same experience more than once. If the circulating pipe has been enlarged and there is no low point, and if all the connections are properly made, there is only one possible fault and that is too much water back and too large a fire space. Shield the water back and it will prove a remedy. Take a piece of  $\frac{7}{8}$ -inch wood and make a pattern and have a plate cast the size of the water back. If the casting is made the same height as the water back and to cover three sides of the fire

chamber so that it can be dropped in and readily held in place, it will simplify matters. In my opinion the location of the boiler has nothing whatever to do with the trouble. Now the whole trouble which "B. K. M." has, and which he will find out, is that his water back was generating steam and its condensation in the boiler caused the noise.

### WILL FURNACEMEN HELP?

From A. S., Alden, Iowa.—I have a furnace to install in a two-story brick building which is to heat two stores under the same roof, as shown by the sketch herewith. The corner store, which has a Southeastern exposure on its longest side, is 100 feet long and 22 feet wide, and has a 12-foot ceiling. The Northeastern end, which is the front, has a glass exposure of 220 square feet, and along the Southeastern side there is a glass exposure of 158 square feet. Beside this store is a drug



*Will Furnacemen Help?*

store, 22 feet wide and 60 feet deep, having 220 square feet of glass at the front and 225 square feet of glass in the rear, opening into a room that is not to be heated. The basement is 6 feet 6 inches deep, and is divided by a stone wall, and the furnace is to be placed under the large store as close as possible to the stone dividing wall. Now the questions on which I should like to have assistance are: What size of furnace should I use? Is it best to use two hot air pipes, one for each store, or would it be better to use more? What size of pipes and registers should I use, as the owner wishes to take cold air from the stores, to use a rotary system and to take the cold air from three different places. No cold air will be taken from the outside. The exposure is very light, as there is another brick building adjoining on the drug store side. There is a furnace in the building, but it has not given satisfaction, never heating the drug store sufficiently. This, I think, is due to the location of the registers and the small size of the cold air duct. The hot air registers are now placed in the center of the floor and the cold air registers between the hot air registers and the furnace, just back of the counter. The second floor has exactly the same plan as the first floor, but it is not to be heated.

### PATTERNS FOR A CHIMNEY TOP.

From J. B., Norwood, Mass.—In *The Metal Worker* of August 2 "J. L." of New Brighton, S. I., asks for the lay out of a chimney top, which information, I note, you have given to him. I also note in *The Metal Worker* of August 16 that Henry Weyand of Waterbury, Conn., claims that if this chimney top as you have laid it out in your illustration is manufactured, it will be an infringement on his patent ventilator. This may be so, as I admit I am not fully conversant with the patent laws. It seems a little odd, however, as I made this same style of chimney top more than 30 years ago, and since, for parties I have worked for, up to within a few years. This style of chimney top is often used on the coast and in this vicinity. I am a practical plumber, tin and sheet iron worker. I began to learn the trade on March 1, 1862, and have been engaged in it continually since. Can you explain for the benefit of your readers wherein the infringement lies? I, for one, should like to know.

### WHO MAKES THE MILLER PATENT CONDUCTOR PIPE?

From A. H., Fulton, Ky.—Will you kindly inform me where and by whom the conductor pipe known as the Miller patent is made?



# TRADE REPORT.

## MARKET SUMMARY.

**Pig Tin** is very dull, and prices have declined about  $\frac{1}{2}$ c. a lb.

**Copper** continues weak and dull.

**Pig Lead** is firm and quiet.

**Spelter** is firm, with continued scarcity of spot.

**Antimony** is quiet and unchanged.

**Nickel** is in fair demand at unchanged prices.

**Aluminum** continues in good demand, with prices unchanged.

**Tin Plates** are very dull and without quotable change in price.

**Sheets** are in fair demand, with weak tendency to prices.

**Scrap Iron** is strong and in active demand.

**Scrap Brass and Copper** are weak and dull.

**Scrap Zinc and Lead** are firm and in good demand.

**Foundry Iron** is scarce to the point of famine for spot and prices are nominal.

**Sheet Copper** is in fair demand and firm in price.

**Sheet Zinc** is moderately active and very firm.

**Hardware** is active for the season, with prices strong in almost all lines.

**Plumbers' Supplies** are active and prices rule firm.

**Solder** is slightly lower in price in sympathy with Tin.

**Cast Iron Pipe and Fittings** are active and strong.

**Plumbers' Brass Goods** are in fair demand and prices rule firm.

**Wire Nails** are in fair demand, with prices well maintained.

**Cut Nails** are unchanged.

**Galvanized Pails** have been advanced 4c. a gross.

**Coffee Mills** have been marked up in price by some makers.

**Linseed Oil** is in fair demand; prices are unchanged.

**Spirits Turpentine** is more active and  $\frac{1}{4}$ c. a gallon higher in price.

## METAL MARKET.

NEW YORK, August 29, 1902.

**Pig Tin.**—Weakness has been the predominant feature of the Tin market throughout the week under review, and prices have dropped quite sharply under the influence of freer offerings and a comparative absence of consumptive demand. At the close the tone of the market was very weak, both here and in London, especially for spot Tin. Jobbers quote Straits Pig in small lots at 28 $\frac{1}{2}$ c. to 28 $\frac{3}{4}$ c. per lb. Arrivals so far this month have amounted to 3240 tons, with 2670 tons afloat. The closing down of so many of the Tin Plate mills has naturally had a depressing effect upon the market here.

**Copper.**—Little or no change has occurred in the Copper market. The consumptive demand has been very light and prices have remained in buyers' favor. While there has been some decline in wholesale prices, jobbers' quotations are unchanged, Lake Ingot in small lots ruling at 12 $\frac{1}{2}$ c. to 12 $\frac{3}{4}$ c. per lb., and Casting Copper 12 $\frac{1}{4}$ c. to 12 $\frac{3}{8}$ c. Exports so far this month show a total of 8200 tons. The market closed weak and tame.

**Sheet Copper.**—The demand for Sheet Copper continues in fair volume, with a good inquiry. Prices remain firm on the basis of 18c. per lb. for Sheet Copper from store.

**Pig Lead.**—The market for Pig Lead continues quiet with a firmer tone and no change in prices or in general conditions. American Pig in small lots is quoted at 4.45c. to 4 $\frac{1}{2}$ c. per lb. St. Louis advices report a quiet market for Pig Lead at that point, with a lack of features of importance. Prices are well maintained.

**Spelter.**—The scarcity of spot metal continues the predominant feature of the Spelter market, which has remained quiet and strong. Jobbers quote good Western brands in small lots at 6 $\frac{1}{4}$ c. to 6 $\frac{3}{8}$ c. per lb. St. Louis advices indicate a considerably smaller movement in the Spelter market, with prices the same as those of a week ago.

**Sheet Zinc.**—The demand for Sheet Zinc is of the usual proportions. Prices are firm and unchanged at 6 $\frac{3}{4}$ c. per lb. for 600 lb. cask lots, and 7 $\frac{1}{4}$ c. to 7 $\frac{1}{2}$ c. for smaller quantities.

**Antimony.**—No change is noted in this metal. Cookson's in small lots is selling at 10c. to 10 $\frac{1}{4}$ c. per lb.; Hallett's at 8 $\frac{3}{4}$ c. to 8 $\frac{1}{2}$ c. and U. S. at 8 $\frac{1}{4}$ c. to 8 $\frac{1}{2}$ c.

**Nickel.**—Is unchanged. Small lots rule at about 55c. to 60c. per lb.

**Aluminum.**—The demand for Aluminum is referred to as good and prices are without change. Small lots of No. 1 Ingot, guaranteed 99 per cent. pure, are quoted at 37c. per lb. and 100-lb. lots at 35c.

**Tin Plates.**—The market for Tin Plates is dull and uninteresting, with an absence of any important buying and no new developments of any kind, except that the volume of small orders received by the local Tin Plate jobbers was rather larger than for the last few weeks. The feeling in regard to the future appears to be unsettled, in view of the fact that so large a proportion of the Tin Plate capacity of the country is now idle. At the same time it is said that the stocks in manufacturers' and dealers' hands are of considerable proportions. Jobbers quote American Bessemer Coke Plates 1C, 14 x 20, at about \$4.70 to \$4.90 per box in moderate sized lots, delivered at New York or corresponding points. The Welsh Tin Plate market has suffered a sharp decline within the past two weeks, the price of Welsh Coke Plates dropping from 13s. 3d. to 12s. 6d. per box, Swansea.

**Sheets.**—The Sheet market is reported to be in a very unsatisfactory condition so far as new tonnage is concerned. Prices show some further signs of softening, especially on the part of some of the outside mills. Galvanized Sheets are also very dull so far as large business is concerned. A rather better trade is reported by jobbing houses in a retail way, but the demand for Thin Sheets is exceptionally dull. Jobbers quote No. 27 One Pass Cold Rolled Soft Steel Sheets in small lots at 3.60c. to 3.65c., and No. 27 Galvanized Sheets at 4.45c. to 4.60c.

Chicago advices are as follows: There has been quite an increased demand for Light Sheets; and Heavy Sheets, as heretofore, have sold well at full prices. Even Galvanized Sheets are selling a little more readily, but the market for the latter is heavy and weak. No. 27 Black Sheets in small lots from store are quoted at 3.45c. to 3.55c., and Galvanized Sheets at 4.55c. to 4.65c. for No. 27.

**Old Metals.**—Scrap Iron is in strong demand, which keeps full pace with the supply. Prices are very firm, but not quotably higher. Old Brass and Copper are dull and weak. Scrap Zinc and Lead remain firm. Dealers are paying about the following rates for moderate sized lots delivered at New York or corresponding points:

|                                        |                            |
|----------------------------------------|----------------------------|
| Heavy Copper.....                      | per lb. 10 c.              |
| Light and Tinned Copper.....           | per lb. 9 c.               |
| Heavy Brass.....                       | per lb. 8 c.               |
| Light Brass.....                       | per lb. 6 $\frac{1}{2}$ c. |
| Lead.....                              | per lb. 3 $\frac{3}{8}$ c. |
| Tea Lead.....                          | per lb. 3 c.               |
| Zinc.....                              | per lb. 3 $\frac{1}{2}$ c. |
| Pure Aluminum Sheet.....               | per lb. 22 c.              |
| Cast Aluminum.....                     | per lb. 17 c.              |
| No. 1 Pewter.....                      | per lb. 18 c.              |
| No. 2 Pewter.....                      | per lb. 9 c.               |
| Tin Plate Scrap, per gross ton.....    | to \$5.00                  |
| Wrought Iron Scrap, per gross ton..... | \$15.00 to 15.50           |
| Heavy Cast Scrap, per gross ton.....   | 13.50 to 14.00             |
| Stove Plate Scrap, per gross ton.....  | 10.00 to 10.50             |
| Burnt Iron, per gross ton.....         | 8.00 to 8.50               |



## THE PIG IRON MARKET.

**NEW YORK.**—Locally the market has been quiet, so far as new orders for domestic Pig Iron are concerned. The troubles as to fuel supply in the Lehigh Valley are becoming more acute and the production is falling off further. We do not hear of any additional sales of magnitude of foreign Foundry Iron and asking prices are a trifle higher. For delivery in 1903 the following quotations are made: Northern Iron, at tidewater, No. 1 X, \$23.25 to \$24.75; No. 2 X, \$22 to \$22.75; No. 2 Plain, \$21 to \$21.75. Tennessee and Alabama brands, in New York and vicinity: No. 1 Foundry, \$22.25 to \$23; No. 2 Foundry, \$21.25 to \$22; No. 3 Foundry, \$21 to \$21.25.

**CHICAGO.**—As far as the volume of actual sales is concerned the Pig Iron market during the week may be said to have been dull; but, viewed from the standpoint of inquiry, there has been as much activity as ever. Were the Iron available, either for the current year or for 1903 delivery, the volume of business would have been considerable. There is much scurrying to obtain Iron for shipment during the next few months, and wherever it has been possible to obtain supplies higher prices have prevailed, No. 1 Southern Iron having sold as high as \$25 at furnace, Birmingham, equivalent to \$28.65 Chicago, while No. 2 has sold within \$1 of No. 1. The scarcity of Coke continues to be the most important feature, the furnaces and foundries alike being in daily need and expecting almost any hour to be compelled to stop. The following are the nominal prices for the first half of 1903:

|                                        |                    |
|----------------------------------------|--------------------|
| Lake Superior Charcoal.....            | \$26.00 to \$27.00 |
| Local Coke Foundry, No. 1.....         | 22.50 to 23.00     |
| Local Coke Foundry, No. 2.....         | 22.00 to 22.50     |
| Local Coke Foundry, No. 3.....         | 21.50 to 22.00     |
| Local Scotch, No. 1.....               | 23.00 to 23.50     |
| Ohio Strong Softeners, No. 1.....      | 25.00 to 26.00     |
| Southern Silvery, according to Silcon. | 22.60 to 23.00     |
| Southern Coke, No. 1.....              | 21.90 to 22.40     |
| Southern Coke, No. 2.....              | 21.15 to 21.65     |
| Southern Coke, No. 3.....              | 20.65 to 21.15     |
| Southern Coke, No. 1 Soft.....         | 21.65 to 22.15     |
| Southern Coke, No. 2 Soft.....         | 21.15 to 21.65     |

**PHILADELPHIA.**—There is no change in the Pig Iron situation, except that the metal seems to be scarcer and new business more difficult to arrange. The furnaces, as a rule, have sold so far ahead that they are afraid to increase their lines. Prices abroad are a little stiffer than they were a week ago, but this is offset by lower freight rates, so that sales are made at about the same prices as for some time past. Cargo lots, c.i.f., are about \$19 for Middlesboro, No. 3, and small lots, \$20 to \$20.50. Alongside or delivered in buyers' yards, the quotation is \$21 to \$21.50. Scotch Irons range from \$22.50 to \$23.50, and American at about the same figures as quoted in our last report for city or nearby deliveries during the first half of next year, with a premium of \$1 to \$1.50 per ton on this year's deliveries. We quote as follows:

|                      |                    |
|----------------------|--------------------|
| No. 1 X Foundry..... | \$23.50 to \$24.50 |
| No. 2 X Foundry..... | 22.00 to 22.50     |
| No. 2 Plain.....     | 21.00 to 22.00     |

**PITTSBURGH.**—The Pig Iron market is very strong, owing to the fact that the output is very restricted on account of the scarcity of Coke. There is some talk of a general shut down of the Valley furnaces next week unless the Coke situation improves. Foundry Iron is exceedingly scarce and can hardly be bought at any price. It has sold for delivery in the first quarter of next year at prices ranging all the way from \$21.50 to \$22.75, Pittsburgh.

## CHICAGO REPORT.

**Scrap Iron and Steel.**—The receipts from the country have increased but little, if any, and with a good outlet for dealers the market has remained firm and full prices have continued to prevail, but without further change. The following are the prices paid by dealers in carload lots, Chicago:

|                                    |                    |
|------------------------------------|--------------------|
|                                    | Per net ton.       |
| Country Wrought Scrap.....         | \$15.00 to \$16.00 |
| Machinery Cast.....                | 14.00 to 14.50     |
| Malleable Cast.....                | 12.00 to 13.00     |
| Stove Plate (free from burnt)..... | 10.50 to 11.00     |
| Burnt Iron and Grate Bars.....     | 8.50 to 9.50       |
| Sheet Iron and Hoops.....          | 9.00 to 10.00      |
| Plow Steel.....                    | 13.00 to 13.50     |
| Breaking Stock.....                | 12.00 to 12.50     |

|                                                        |                |
|--------------------------------------------------------|----------------|
| Old Boilers—whole (Iron).....                          | 9.50 to 10.00  |
| Old Boilers (Iron) cut in single Sheets and Rings..... | 13.00 to 14.00 |
| Old Gas Pipe and Boiler Tubes.....                     | 13.00 to 13.50 |
| Cast Borings.....                                      | 9.00 to 9.50   |
| Turnings.....                                          | 12.50 to 13.00 |
| Horseshoes.....                                        | 13.00 to 13.50 |

**Old Metal.**—Copper and Brass have continued quiet and easy in tone under liberal offerings and little demand, but Zinc and Lead have continued firm. Dealers are ready buyers at quotations. The following are the prices paid by dealers in this market:

|                            |                     |
|----------------------------|---------------------|
|                            | Per lb.             |
| Copper Wire and Heavy..... | 10 $\frac{1}{2}$ c. |
| Copper Bottoms.....        | 9 $\frac{1}{4}$ c.  |
| Copper Clips.....          | 10 c.               |
| Red Brass.....             | 10 $\frac{1}{4}$ c. |
| Yellow Brass.....          | 8 c.                |
| Red Brass Borings.....     | 9 $\frac{1}{4}$ c.  |
| Yellow Brass Borings.....  | 7 c.                |
| Light Brass.....           | 6 $\frac{3}{8}$ c.  |
| Pipe Lead.....             | 3.70c.              |
| Tea Lead.....              | 3.35c.              |
| Zinc.....                  | 3.45c.              |
| Tin Foil.....              | 21 c.               |
| Pewter, No. 1.....         | 18 c.               |
| Pewter, No. 2.....         | 11 c.               |
| Aluminum.....              | 20 c.               |

**Old Rubber.**—The market has been steady, with moderate offerings and a fair outlet to dealers. Prices have remained as previously quoted. Dealers buy at the following prices, Chicago delivery:

|                            |              |                    |
|----------------------------|--------------|--------------------|
|                            | Per net ton. | Per lb.            |
| Garden Hose.....           | \$25.00      | .....              |
| Air Brake Hose.....        | 45.00        | .....              |
| Rubber Shoes.....          | .....        | 7 c.               |
| Rubber Car Springs.....    | .....        | 5 c.               |
| Inside Bicycle Tubing..... | .....        | 22 c.              |
| Outside Tubing.....        | .....        | 5 c.               |
| Black Rubber.....          | .....        | 4 c.               |
| White Rubber.....          | .....        | 8 $\frac{1}{2}$ c. |

**Rags.**—The market has gradually hardened in tone, offerings, especially of Woolen Rags, being light. Dealers are more ready buyers of Country Mixed at 75c. to 85c. per 100 lbs., Chicago delivery.

**Anthracite Coal.**—The conditions previously noted have been aggravated, receipts being light and demand more and more urgent, resulting in a further advance of \$1.50 to \$2.50 per ton during the week. Wholesale dealers have purchased the few cars offered at \$8 to \$8.50 per ton, and there were sales to-day of 70 to 100 tons, egg size, at \$9.50 on track. No news of any encouraging nature has been received from the mines. We omit the regular table, prices being erratic.

## THE HARDWARE TRADE.

Seldom have general conditions been so satisfactory. The volume of business is now reported to be increasing from week to week. The distribution from jobbers to retailers is on a heavy scale, as shown by the urgent demand for manufacturers to hurry shipments on back orders. The movement in Builders' Hardware is reported larger than at any previous time. Fresh orders are being booked from buyers, who say that they had supposed themselves amply supplied for the fall trade. These orders are coming from nearly all sections of the country, but are especially heavy from the Northwest and the Pacific Coast. Building operations are being pushed actively in the strictly agricultural sections of the country as well as in the cities. The improvements thus under way are increasing the demand for Nails and other staple goods, and some branches of trade which have recently been quiet are now taking on improving conditions. It is observed that merchants who have had sufficient faith in the stability of values and the maintenance of a good demand to keep well stocked are now reaping the reward of their confidence, while those who hesitated, looking for a reaction, are suffering from scanty supplies which cannot be quickly replenished. A significant feature of current business is the equanimity with which any weakening in price on some staples is regarded. It seems to breed no great distrust, but is simply considered as an incident peculiar to its own line. Changes thus made, however, are not important, and probably more advances than declines are to be noted. Consolidations of manufacturers of sundry articles, such as Steel Goods, Axes, Axe Handles and Grindstones, and closer relations, as in the case of Scythe manufacturers, promise a stiffening of prices in the products thus affected. The developments in this direction are therefore interesting and will be closely followed by the trade.



## NOTES ON PRICES.

**Plumbers' Supplies.**—Some increase in the demand for Plumbers' and Steam Fitters' Supplies was noted during the week, both from the out of town and city trade. A good deal of work is going on in the city limits, both in the way of new construction and repairs. The influence of the usual summer holiday dullness seems to be passing away and the trade is preparing for a season of active work. Prices are well maintained throughout the whole line with upward tendency in some directions, notably in Iron goods. The condition of the market for raw material makes it evident to consumers that no decline in the price of goods into which Iron enters may be expected this year. The demand for Cast Iron Pipe and Fittings in particular is very heavy and prices have an upward tendency. Brass Goods are moving in fair volume and with prices fairly maintained.

**Galvanized Pails.**—The manufacturers of Galvanized Pails have advanced prices about 4 cents a gross. The demand for all kinds of Galvanized Ware is referred to as active, and the factories are fully employed on orders.

**Coffee Mills.**—Some of the manufacturers of Coffee Mills have advanced the price of these articles in consequence of the high price and scarcity of raw material.

**Solder.**—Owing to a sharp decline in the Pig Tin market the manufacturers of Solder have reduced their prices. Half and Half Solder, guaranteed, is quoted in small lots at 19 to 19½ cents per pound, and No. 1 at 16½ to 18 cents.

**Wire Nails.**—Persistent reports were in circulation during the week that a reduction in the price of Wire Nails would be announced about September 1. As far as can be learned, however, no authority for such a statement exists. Business is of fair volume for the season the fall demand not yet having begun. Prices are unchanged, small lots from store, New York, being quoted at \$2.25 to \$2.30 per keg.

**Cut Nails.**—Conditions in the New York Cut Nail market are unchanged, with a moderate demand. Manufacturers are said to be falling somewhat behind their orders, owing to lack of transportation facilities. Small lots of Cut Nails from store are quoted at \$2.30 per keg.

**Window Glass.**—A more hopeful view is taken of the future of the Glass market. It is believed that the independent Glass interests and the American Window Glass Company are likely to come to some sort of an agreement as to limiting the output. This would give the companies an opportunity of disposing of their stock of Glass on hand, and probably avert a price war. The Jobbers' Association quotation for Single and Double Strength Glass from store continues at 88 and 5 per cent. discount.

**Linseed Oil.**—The reduction in the price of Linseed Oil has not influenced buyers to come into the market to any extent, while, on the other hand, the lack of demand and anxiety on the part of some holders to sell has resulted in lower quotations for out of town brands. Small lots of Oil are moving fairly well. City Raw is selling in a retail way at 61 to 61½ cents per gallon, Boiled Oil being 2 cents per gallon advance on Raw. Out of Town Raw is quoted at 60 to 60½ cents per gallon.

**Spirits Turpentine.**—Some activity has been developed in the Turpentine market during the week, as a result of a stronger feeling in the South and a reduction in supplies in the hands of local consumers. Prices have advanced ¼ cent per gallon, Turpentine in small quantities being now quoted at 47¼ to 47¾ cents per gallon.

THE GRAND RAPIDS STREET RAILWAY COMPANY of Grand Rapids, Mich., will try a new method of heating their cars this winter, the electric heating formerly used having proved too expensive and too much of a drain on the current which furnishes the motive power for the cars. Some of the company's cars are now being fitted with a furnace located under the floor of the car, between the trucks, the heat entering the car through a

register in the floor. The furnace will also act as a ventilator, the pure, outside air being heated as it passes through the furnace into the car in a similar manner as a house furnace is regulated.

Consul J. F. Freeman of Copenhagen, Denmark, reports that a new material for plastic art, to which is given the name of Terralit, has recently come into extensive use in Denmark. The inventor is Ivar Hjort of Copenhagen, who has experimented with his material for the last two years. It is produced by a chemical process which has not been made public. A peculiarity of Terralit is that it gives the same color and appearance as the original which it is sought to represent, whether it be copper, marble, bronze, porcelain or ceramic ware. An exhibit has recently been opened in Copenhagen of 40 or 50 of the most celebrated ancient and modern busts, statuettes and animal figures made of this material. The imitations of bronze are said to be particularly successful.

## CONTENTS.

|                                                               | PAGE. |
|---------------------------------------------------------------|-------|
| Editorials—                                                   |       |
| The Losses through the Anthracite Coal Strike.....            | 39    |
| Popularity of Metal Ceilings.....                             | 39    |
| Sizes of Catalogues.....                                      | 39    |
| Editorial Notes.....                                          | 40    |
| Can Panics Be Prevented?.....                                 | 40    |
| Trade in the Northwest.....                                   | 40    |
| Condition of the Stove Trade.....                             | 41    |
| Mott's Caldrons.....                                          | 41    |
| Nominations for Stove Captains.....                           | 41    |
| White's Stoves, Ranges and Heaters.....                       | 42    |
| Gold Coin Stoves and Ranges.....                              | 42    |
| The Reincke, Wilson Company's Gas Stove Catalogue.....        | 42    |
| The History of Doe-Wah-Jack.....                              | 42    |
| Some Hints About Advertising.....                             | 43    |
| An Important Stove Suit.....                                  | 43    |
| Odd Plates.....                                               | 43    |
| Imperial Roller Towel Rack. Illustrated.....                  | 45    |
| The New England Food Chopper. Illustrated.....                | 45    |
| Keeping Dampers. Illustrated.....                             | 45    |
| Cream City Ware.....                                          | 45    |
| Stove and Hardware Dealers.....                               | 46    |
| Soldering Aluminum.....                                       | 46    |
| The Slocumb Sheet Metal or Rubber Gauge. Illustrated.....     | 47    |
| Keystone Crocodile Wrenches. Illustrated.....                 | 47    |
| Journeymen Plumbers' Annual Meeting.....                      | 48    |
| Richmond, N. Y., Plumbers' Outing.....                        | 48    |
| Pathfinder Portable Acetylene Generator. Illustrated.....     | 48    |
| The Columbus Gas Arc Lamp. Illustrated.....                   | 49    |
| The Billow System of Fuel Oil Appliances.....                 | 49    |
| Quincy, Mass., Master Plumbers.....                           | 49    |
| Standard Boiler Catalogue.....                                | 49    |
| A Combination House Tank. Illustrated.....                    | 50    |
| Thatcher Steam and Hot Water Heaters.....                     | 50    |
| The Fowler & Wolfe Wall Radiators.....                        | 50    |
| The Twentieth Century Gas Producing Apparatus.....            | 50    |
| The Nethery Hydraulic Flush Valve. Illustrated.....           | 51    |
| Very Ancient Plumbing.....                                    | 51    |
| Acetylene for Car Lighting.....                               | 52    |
| Apron Pattern Porcelain Enameled Lavatories. Illustrated..... | 52    |
| New York City Notes.....                                      | 52    |
| Outing of Manhattan Branch Plumbers.....                      | 53    |
| Heating and Plumbing Notes.....                               | 53    |
| New Firms and Changes.....                                    | 55    |
| New Publication.....                                          | 55    |
| Patterns for Flour Sifter. Illustrated.....                   | 56    |
| New York Sheet Metal Workers' Wages.....                      | 57    |
| Death of Charles H. Curtis.....                               | 57    |
| The E. W. Bliss Company.....                                  | 57    |
| A Combination Die. Illustrated.....                           | 58    |
| Tectorium.....                                                | 58    |
| The Late John Henry.....                                      | 59    |
| A Large Copper Contract.....                                  | 59    |
| The Vulcan Detinning Company.....                             | 59    |
| Flashings.....                                                | 59    |
| Trade Notes.....                                              | 60    |
| Successful Scheme of Ventilation at Sheffield, England.....   | 60    |
| The Letter Box—                                               |       |
| Fuel Oil Burners.....                                         | 61    |
| Questions for Plumbers.....                                   | 61    |
| Boiler Too Low.....                                           | 61    |
| Will Furnacemen Help? Illustrated.....                        | 61    |
| Patterns for a Chimney Top.....                               | 61    |
| Who Makes the Miller Patent Conductor Pipe?.....              | 61    |
| Trade Report—                                                 |       |
| Market Summary.....                                           | 62    |
| Metal Market.....                                             | 62    |
| The Pig Iron Market.....                                      | 63    |
| Chicago Report.....                                           | 63    |
| The Hardware Trade.....                                       | 63    |
| Notes on Prices.....                                          | 64    |
| Metal and Miscellaneous Prices.....                           | 65    |
| Labor Exchange—                                               |       |
| Help and Situations Wanted.....                               | 69    |



## ROOFING SUPPLIES, METALS, TIN PLATES, &amp;c.

REVISED AUGUST 28, 1902.

**Aluminum—**

|                                                                     |        |        |        |
|---------------------------------------------------------------------|--------|--------|--------|
| No. 1 Aluminum (guaranteed over 99% Pure), in ingots for remelting. |        |        |        |
| Small lots.....                                                     | lb.    | 37¢    |        |
| 100-lb lots.....                                                    | lb.    | 35¢    |        |
| Aluminum Sheet, B. & S. gauge.                                      |        |        |        |
| In lots of 50 lbs or more.                                          |        |        |        |
| Wider than.....                                                     | 6-in.  | 14-in. | 24-in. |
| And including.....                                                  | 14-in. | 24-in. | 30-in. |
| Nos. 13 to 19.....                                                  | \$0.42 | \$0.44 | \$0.47 |
| " 20.....                                                           | .44    | .46    | .49    |
| " 21 to 23.....                                                     | .46    | .48    | .51    |
| " 24.....                                                           | .46    | .50    | .53    |
| " 25.....                                                           | .47    | .51    | .54    |
| " 26.....                                                           | .47    | .54    | .59    |
| " 27.....                                                           | .48    | .57    | .62    |
| " 28.....                                                           | .48    | .57    | .64    |
| " 29.....                                                           | .49    | .60    | .69    |
| " 30.....                                                           | .50    | .64    | .77    |

Note.—Lots of less than 50 lbs 5¢ lb extra.

**Antimony—**

|                |     |                |
|----------------|-----|----------------|
| Cookson.....   | lb. | 10 @ 10 1/4¢   |
| Hallett's..... | lb. | 8 3/4 @ 8 5/8¢ |
| U.S.....       | lb. | 8 1/4 @ 8 1/2¢ |

**Brass, Roll and Sheet..... 30%****Conductors—****Corrugated.**

|                                          |              |
|------------------------------------------|--------------|
| Round or Square.—                        |              |
| Galvanized 1/2 or more, N'st'd.....      | 75%          |
| " Not Nested.....                        | 70 & 12 1/2% |
| " Plain Round, 1/2 or more.....          | 75%          |
| Nested.....                              | 75%          |
| Galvanized, Plain Round, Not Nested..... | 70 & 12 1/2% |

**Spiral Lock Seam Pipe—**

|                 |               |
|-----------------|---------------|
| Galvanized..... | 60 @ 60 & 10% |
|-----------------|---------------|

**Spiral Riveted.**

|                 |     |
|-----------------|-----|
| Galvanized..... | 40% |
|-----------------|-----|

See also Elbows and Shoes; Eave Trough Mitres; Strainers, Conductor.

**Conductor Strainers—**

See Strainers, Conductor

**Copper—**

|                                      |                  |
|--------------------------------------|------------------|
| Lake Ingot.....                      | 12 1/2 @ 12 3/4¢ |
| Coating.....                         | 12 1/4 @ 12 3/4¢ |
| Sheet and Bolt.....                  | 18 1/2 @ 18 3/4¢ |
| Cold Rolled Sheets.....              | 19 1/2 @ 19 3/4¢ |
| Cold Rolled and Polished Sheets..... | 20¢ basis        |
| Planished Sheets.....                | 21¢ basis        |
| Bottoms, Pits and Flats.....         | 22¢ basis        |

**Eave Trough Galvanized**

|                 |              |
|-----------------|--------------|
| Territory.....  | L. C. L.     |
| Eastern.....    | 80%          |
| Central.....    | 75 & 17 1/2% |
| Southern.....   | 75 & 17 1/2% |
| S. Western..... | 75 & 15%     |

Terms, 2% for cash.

**Eave Trough Mitres—**

|                        |           |
|------------------------|-----------|
| Lap or Slip Joint..... | 11st, 25% |
|------------------------|-----------|

**Elbows—Plain Adjustable—**

|                     |     |
|---------------------|-----|
| Eastern List.....   | 30% |
| Tin.....            | 30% |
| Galvanized.....     | 30% |
| Perfect Elbows..... | 40% |

**Stove Pipe—**

|                 |                                   |
|-----------------|-----------------------------------|
| Four-Piece..... | 4 1/4 5 1/4 6-Inch.               |
| No. 1.....      | \$0.80 .85 .90 1.00 1.05 per doz. |
| No. 2.....      | .65 .70 .75 .80 .85 "             |
| No. 3.....      | .60 .63 .65 .70 .80 "             |

**Elbows and Shoes—**

|                 |     |
|-----------------|-----|
| Galvanized..... | 60% |
|-----------------|-----|

**Gasoline—**

See Petroleum Products.

**Iron, Sheet—Black.**

|                     |     | One Pass, C. R. | R. G.    |
|---------------------|-----|-----------------|----------|
|                     |     | Soft Steel      | Cleaned. |
| Nos. 14 to 16.....  | lb. | 3.25            | 3.30     |
| Nos. 18 to 21.....  | lb. | 3.35            | 3.40     |
| Nos. 22 to 24.....  | lb. | 3.45            | 3.50     |
| Nos. 25 and 26..... | lb. | 3.55            | 3.60     |
| No. 27.....         | lb. | 3.65            | 3.70     |
| No. 28.....         | lb. | 3.75            | 3.80     |

**Russia, Planished, &c.**

|                                                |     |                    |
|------------------------------------------------|-----|--------------------|
| Genuine Russia, accord- ing to assortment..... | lb. | 11 @ 11¢           |
| Do. Stained.....                               | lb. | 10 @ 10¢           |
| Patent Planished.....                          | lb. | A, 11¢; B, 10¢ net |

**Galvanized.**

|                                                 |     |              |
|-------------------------------------------------|-----|--------------|
| Nos. 14 and 16.....                             | lb. | 3.40 @ 3.45¢ |
| Nos. 18 and 20.....                             | lb. | 3.65 @ 3.75¢ |
| Nos. 22 and 24.....                             | lb. | 3.95 @ 4.05¢ |
| No. 26.....                                     | lb. | 4.20 @ 4.35¢ |
| No. 27.....                                     | lb. | 4.50 @ 4.65¢ |
| No. 28.....                                     | lb. | 4.80 @ 4.95¢ |
| No. 30.....                                     | lb. | 5.95 @ 6.15¢ |
| No. 20 and lighter, 36 inches wide, 25¢ higher. |     |              |

**Lead—**

|                                      |               |
|--------------------------------------|---------------|
| American Pig.....                    | 4.45 @ 4 1/2¢ |
| Bar.....                             | 5 @ 5 1/2¢    |
| Pipe.....                            | 6 1/2¢        |
| Tin Lined Pipe.....                  | 12 1/2¢       |
| Sheet Lead.....                      | 7 1/2¢        |
| Old Lead in exchange, 3 1/2¢ lb. off |               |

**Mitres Eave Trough—**

See Eave Trough Mitres.

**Nickel—**

|             |          |
|-------------|----------|
| Per lb..... | 53 @ 60¢ |
|-------------|----------|

**Paints, Oils &c.—****Leads—**

|                                                                      |                |
|----------------------------------------------------------------------|----------------|
| Lead, American White, in Oil:                                        |                |
| Lots of 500 lb or over.....                                          | 6 1/4 @ 6 1/2¢ |
| Lots less than 500 lb.....                                           | 6 1/2 @ 6 3/4¢ |
| Lead, White, in oil, 25 lb tin pails, add to keg price.....          | 1¢             |
| Lead, White, in oil, 12 1/2 lb tin pails, add to keg price.....      | 1¢             |
| Lead, White, in oil, 1 to 5 lb as sorted tins, add to keg price..... | 1 1/2¢         |
| Lead, White, Dry in bbls.....                                        | 5 1/4 @ 6¢     |
| Lead, Red, bbls., 1/2 bbls. and kegs:                                |                |
| Lots 500 lb or over.....                                             | 6¢             |
| Lots less than 500 lb.....                                           | 6 1/2¢         |

**Oils—**

|                                    |      |              |
|------------------------------------|------|--------------|
| Linseed, City, raw.....            | gal. | 61 @ 61 1/2¢ |
| Linseed, City, boiled.....         | gal. | 63 @ 63 1/2¢ |
| Linseed State and West'n, raw..... | gal. | 60 @ 60 1/2¢ |

**Spirits Turpentine—**

|                       |                  |
|-----------------------|------------------|
| In Southern bbls..... | 47 1/4 @ 47 3/4¢ |
| In machine bbls.....  | 47 1/4 @ 49 1/4¢ |

**Putty—**

|                             |        |
|-----------------------------|--------|
| In bulk.....                | \$2.25 |
| In bladders.....            | 2.25   |
| In cans 12 lb to 25 lb..... | 2.25   |
| In cans 1 lb to 5 lb.....   | 3.25   |

**Petroleum Products—**

|                              |                  |
|------------------------------|------------------|
| In Barrels (Barrel Included) |                  |
| Stove Gasoline.....          | gal. 10 1/4 @ 11 |

**Pipe, Block Tin—**

|             |     |
|-------------|-----|
| Per lb..... | 37¢ |
|-------------|-----|

**Pipe Drain—**

|             |     |
|-------------|-----|
| Per lb..... | 40¢ |
|-------------|-----|

**Pipe, Spiral—**

See Conductors.

**Registers—**

List Sept. 2, 1901.

|                                                |     |
|------------------------------------------------|-----|
| Black Japanne l.....                           | 70¢ |
| White Japanne l.....                           | 70¢ |
| Nickel Plated.....                             | 70¢ |
| Bronze Finishes in Imitation of Gold.....      | 70¢ |
| Silver, Copper or Bronze.....                  | 70¢ |
| Electroplate l in Brass, Bronze or Copper..... | 70¢ |
| White Porcelain.....                           | 60¢ |
| Solid Brass and Bronze Metal.....              | 50¢ |

**Roofing Material—**

|                                  |                            |
|----------------------------------|----------------------------|
| 1 Ply Tarred Paper, 1/2 ton..... | \$31.00 @ 32.00            |
| 2 Ply Tarred Paper.....          | roll, 108 sq. ft. 55 @ 60¢ |
| 3 Ply Tarred Paper.....          | roll, 108 sq. ft. 80 @ 85¢ |
| Slate's Felt.....                | 1 ton, \$35.00 @ 36.00     |
| Roofing Pitch.....               | 1 bbl. \$2.50              |

**Rosin—**

|                           |                        |
|---------------------------|------------------------|
| Common and Good—Strained. |                        |
| Rosin, C. & D.....        | 1 bbl. \$1.57 @ \$1.60 |
| Rosin, E. & F.....        | 1 bbl. 1.65 @ 1.72 1/2 |
| Rosin, G. & H.....        | 1 bbl. 1.75 @ 1.90     |
| Rosin, I. & K.....        | 1 bbl. 2.35 @ 3.00     |
| Rosin, M. & N.....        | 1 bbl. 3.35 @ 3.70     |

**Shoes and Elbows—**

See Elbows and Shoes.

**Slate Roofing—**

f. o. b. cars, Quarry Station.

|                                           |                 |
|-------------------------------------------|-----------------|
| Pennsylvania:                             |                 |
| Best Bangor, 1/2 sq.....                  | \$3.75 @ \$6.00 |
| No. 1 Bangor Ribbon, 1/2 sq.....          | 3.50 @ 3.75     |
| Pen Argyle, 1/2 sq.....                   | 3.50 @ 4.50     |
| Peach Bottom, 1/2 sq.....                 | 5.25 @ 6.35     |
| No. 1 Chapman, 1/2 sq.....                | 3.75 @ 4.75     |
| No. 1 Penna. Black, 1/2 sq.....           | 3.15 @ 4.15     |
| Unfading Washington Ban- gor, 1/2 sq..... | 3.00 @ 4.50     |
| Vermont:                                  |                 |
| No. 1 Sea Green, 1/2 sq.....              | \$2.25 @ \$3.50 |
| Purple, 1/2 sq.....                       | 4.50 @ 5.00     |
| Unfading Green, 1/2 sq.....               | 4.25 @ 5.25     |
| Rel, 1/2 sq.....                          | 7.00 @ 11.00    |
| Maine:                                    |                 |
| Brownville, Unfading Black.....           |                 |
| No. 1, 1/2 sq.....                        | \$5.25 @ 7.50   |

**Solder—**

|                                                                             |              |
|-----------------------------------------------------------------------------|--------------|
| 1/2 lb guaranteed.....                                                      | 19 @ 19 1/2¢ |
| No. 1.....                                                                  | 1 1/4 @ 18¢  |
| Prices of Solder Indicated by private brands vary according to composition. |              |

**Soldering Fluids—**

| Per Pound.                        |           | Smaller Barrels | Quintiles |
|-----------------------------------|-----------|-----------------|-----------|
| Concentrated Flux.....            |           | 4c              | 5c        |
| Eureka Flux:                      |           |                 |           |
| Triple Strength.....              | 3c        | 3 1/2c          |           |
| Extra Concentrated.....           | 4 1/2c    | 5c              |           |
| Crystal.....                      | 7c        |                 |           |
| Gedney's Fluid.....               | 2c        | 2c              |           |
| Lennox Fluid.....                 | 2c        | 3c              |           |
| Perfection Flux.....              | 3c        | 3 1/2 @ 1c      |           |
| Yager's Salts, 1 lb. bottles..... | each, 50¢ |                 |           |
| 1 lb. bottles, per lb., 45¢       |           |                 |           |

**Soldering Coppers—**

|             |          |
|-------------|----------|
| Per lb..... | 22 @ 24¢ |
|-------------|----------|

**Spelter—**

|                      |                |
|----------------------|----------------|
| Western Spelter..... | 6 1/2 @ 6 3/4¢ |
|----------------------|----------------|

**Spiral Pipe—**

See Conductors.

**Stove Pipe Elbows—**

See Elbows, Stove Pipe.

**Stove Trucks—**

See Trucks, Stove.

**Strainers, Conductor—**

|                 |     |
|-----------------|-----|
| Galvanized..... | 50% |
|-----------------|-----|

**Tin Pigs and Bars—**

|                               |              |
|-------------------------------|--------------|
| Sanca, pigs, 1/2 lb.....      | 28 1/2 @ 29¢ |
| Straits, pigs, 1/2 lb.....    | 28 1/2 @ 29¢ |
| Straits, in bars, 1/2 lb..... | 29 1/2 @ 30¢ |

**Tin Plates American****Charcoal Plates, Bright—**

N. B.—The price of 20 x 28 sizes double the price of 14 x 20.

|                     |        |
|---------------------|--------|
| Calland Grade:      |        |
| IC, 14 x 20.....    | \$6.75 |
| IX, 14 x 20.....    | 8.25   |
| IXX, 14 x 20.....   | 9.50   |
| IXXX, 14 x 20.....  | 10.75  |
| IXXXX, 14 x 20..... | 12.00  |

**Melyn Grade:**

|                     |       |
|---------------------|-------|
| IC, 14 x 20.....    | 6.25  |
| IX, 14 x 20.....    | 7.75  |
| IXX, 14 x 20.....   | 9.00  |
| IXXX, 14 x 20.....  | 10.25 |
| IXXXX, 14 x 20..... | 11.50 |

**Allaway Grade:**

|                     |       |
|---------------------|-------|
| IC, 14 x 20.....    | 5.75  |
| IX, 14 x 20.....    | 6.85  |
| IXX, 14 x 20.....   | 7.95  |
| IXXX, 14 x 20.....  | 9.05  |
| IXXXX, 14 x 20..... | 10.15 |

**Coke Plates, Bright—**

|                                                 |               |
|-------------------------------------------------|---------------|
| Bessemer Steel, or equal to J. IC, 14 x 20..... | \$4.90 @ 5.00 |
| B. Grade, full weight.....                      |               |
| IX, 14 x 20.....                                | \$6.00        |

N. B.—The reduction per box on lighter plates than IC, 14 x 20, is as follows:

|             |     |
|-------------|-----|
| 100 lb..... | 15¢ |
| 95 lb.....  | 20¢ |
| 90 lb.....  | 25¢ |
| 85 lb.....  | 30¢ |

**Terne Plates—**

N. B.—The following prices are for IC 20 x 28, the rate for 14 x 20 being half as much. IX is usually held at \$2 per box advance for 8 to 10 lb coating and \$2.50 to \$3 advance for 15 lb and upward.

|                          |                 |
|--------------------------|-----------------|
| About 40 lb coating..... | \$16.00 @ 16.50 |
| About 30 lb coating..... | 15.25 @ 15.75   |
| About 20 lb coating..... | 13.25 @ 13.75   |
| About 15 lb coating..... | 11.25 @ 11.75   |
| About 8 lb coating.....  | 9.50 @ 10.00    |

**Boiler Plates, American—**

|                                  |         |
|----------------------------------|---------|
| IXX, 14 x 26.. (112 sheets)..... | \$12.50 |
| IXX, 14 x 28.. (112 sheets)..... | 13.50   |
| IXX, 14 x 31.. (112 sheets)..... | 15.00   |

**Troughs Eave—**

See Eave Trough.

**Trucks, Stove—**

|                                      |         |
|--------------------------------------|---------|
| Improved Lock Frame, per doz.....    | \$15.00 |
| Steel Lock Frame, per doz.....       | 18.00   |
| Daisy Improved pattern, 1/2 doz..... | 18.00   |

**Tubes and Tubing—**

|                                                         |     |
|---------------------------------------------------------|-----|
| Brazed Brass, List June 6, 1893.....                    | 40% |
| Copper and Bronze, 3¢ per lb. list more than Brass..... |     |
| Seamless Brass Tubes, net list Feb. 8, 1899.....        |     |
| Tin.....                                                | 50% |
| Galvanized.....                                         | 50% |
| Fittings for do.....                                    | 40% |

**Zinc—**

|                           |                |
|---------------------------|----------------|
| 600 lb cask a 1/2 lb..... | 63 1/2¢        |
| Per lb.....               | 7 1/4 @ 7 1/2¢ |

## PLUMBERS' AND STEAM FITTERS' SUPPLIES.

**Boilers, Galvanized—**

|                               |         |
|-------------------------------|---------|
| Standard Boilers:             |         |
| 30 gal.....                   | 72 1/2% |
| 35 and 40 gal.....            | 70%     |
| Other sizes up to 52 gal..... | 65%     |
| 52 gal. and above.....        | 55 & 5% |

**Extra Heavy Boilers:**

|                        |         |
|------------------------|---------|
| 18 to 52 gal.....      | 60%     |
| 53 gal. and above..... | 50 & 5% |

**Brass Work, Plumbers'—**

List of December 7, 1896.

**Compression:**

|                                       |          |
|---------------------------------------|----------|
| Basin Cocks.....                      | 60 & 10% |
| Bath Cocks and Double Bath Cocks..... | 60 & 10% |
| Bibs.....                             | 60 & 10% |
| Bibs, Flanged.....                    | 60 & 10% |

**Fuller:**

|                               |                 |
|-------------------------------|-----------------|
| Bibs.....                     | 70%             |
| Basin Cocks, Nos. 1 to 4..... | 70%             |
| Bath Cocks, No. 4 1/2.....    | \$2.40 each net |

**Ground Key Work:**

|                                                    |              |
|----------------------------------------------------|--------------|
| Finished Bibs.....                                 | 60%          |
| Rough Bibs.....                                    | 60 & 5%      |
| Rough Stop and Stop and Waste Cocks.....           | 70 @ 70 & 5% |
| Rough Stop and Stop and Waste Cocks, Patented..... | 65 @ 65 & 5% |

**Miscellaneous—**

|                   |              |
|-------------------|--------------|
| Basin Clamps..... | 60 @ 65%     |
| Basin Plugs.....  | 60 @ 65%     |
| Chain Stays.....  | 60 & 5 @ 70% |

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|                                            |                                          |                                                      |                                                |                                          |
|--------------------------------------------|------------------------------------------|------------------------------------------------------|------------------------------------------------|------------------------------------------|
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| Adler, H. Co..... 11                       | Clayton & Lambert Mfg. Co.. 37           | Gummey, McFarland & Co... 75                         | Monarch Stove & Mfg. Co.... 9                  | Schratwiesers Metal Lath Works..... 72   |
| American Blower Co..... 25                 | Coe, Jas. A. & Co..... 77                | Gurney Heater Mfg. Co..... 21                        | Monash-Younger Co..... 34                      | Schwab, R. J. & Sons Co..... 23          |
| American Galvanizing Wks., 73              | Colebrook, W. H. Sons & Co.. 30          | Harrington & King Perforating Co..... 66             | Moncrief F'ce & Fdry. Co... 27                 | Schwerdtle Stamp Co..... 73              |
| American Radiator Co..... 19               | Colwell Lead Co..... 37                  | Hart & Cooley Co..... 29                             | Montross Metal Shingle Co... 77                | Selleck, A. C..... 27                    |
| American Sheet Steel Co... 1&76            | Cooney & Geiger..... 72                  | Hart & Crouse Co..... 18                             | Morgan & Co..... 36                            | Sheppard, Isaac A. & Co..... 1           |
| American Steam Gage & Valve Mfg. Co..... 1 | Cope, Geo. W..... 31                     | Heartley Machine Variety Iron & Tool Works..... 83   | Mott, J. L. Iron Works..... 26                 | Shields, W. H. & Co..... 33              |
| American Tin Plate Co..... 76              | Cortright Metal Roofing Co.. 77          | Heath, C. C. & Co..... 30                            | Mueller, L. J. F'ce Co.. 21                    | Smith, H. B. Co..... 15                  |
| Anderson Coupling Co..... 36               | Crosby Steam Gage & Valve Co..... 1      | Hellos-Upton Co..... 26                              | Munsell, E. & Co..... 31                       | Smith & Anthony Co..... 84               |
| Arcade Mfg. Co..... 30                     | Curtis & Curtis Co..... 36               | Hessler, H. E. Co..... 33                            | National Enamelling & Stamp-lug Co..... 38     | Smith & Thayer Co..... 26                |
| Armstrong Mfg. Co..... 36                  | Dangler Stove & Mfg. Co.... 8            | Hoffman, Geo. W..... 31                              | National Pipe Bending Co... 12                 | Somerset Stove Fdry. Co.... 27           |
| Art Modelling Works..... 79                | Danzer Metal Works..... 81               | Howes, S. M. Co..... 24&31                           | New York Iron Roofing & Corrugating Co..... 73 | Sommer's, John Son..... 1                |
| Asheville Mica Co..... 31                  | Day Metallic Mfg. Co..... 34             | Howson & Howson..... 71                              | New York Trade School.... 70                   | Special Notices..... 70                  |
| Asphalt Ready Roofing Co.. 77              | Dighton Furnace Co..... 23               | Hubbell, Harvey..... 37                              | Niagara Machine & Tool Wks 81                  | Sperry, D. R. & Co..... 72               |
| Ayling Bros..... 31                        | Dixon, Jos. Crucible Co..... 30          | Independent Register Co.... 27                       | Nickel Plate Stove Polish Co 30                | Stamford Foundry Co..... 13              |
| Barstow Stove Co..... 84                   | Double Truss Cornice Brake Co..... 80    | International Heater Co..... 3                       | Noppel Pump Co..... 36                         | Standard Lighting Co..... 12             |
| Beckwith, P. D., Est. of.... 2             | Drake, W. H..... 29                      | Iwan Bros..... 72                                    | Norwall Mfg. Co..... 37                        | Steel & Iron Aluminum Coating Co..... 75 |
| Bell, M. C..... 82                         | Drouve, G. Co..... 81                    | Janney, Steinmetz & Co..... 74                       | Nye, A. T. & Son Co..... 10                    | Stiles & Parker Press Co.... 82          |
| Berger Bros. Co..... 74                    | Edwards, J. H..... 34                    | Jenkins Bros..... 1                                  | O'Halloran & Jacobs..... 73                    | Stocking, E. B..... 71                   |
| Berger Mfg. Co..... 78                     | Edwards Mfg. Co..... 78                  | Johnson, E. J. & Co..... 73                          | Ohio Mica Co..... 31                           | Stolz, Frank D..... 25                   |
| Bergstrom Bros. & Co..... 10               | Ellers, J. H. & Co..... 79               | Joliet Stove Works..... 6                            | Ohl, Geo. A. & Co..... 82                      | Stowell Mfg. Co..... 80                  |
| Bertsch & Co..... 82                       | Energy Elevator Co..... 72               | Keene, Geo. C. & Co..... 83                          | Osborn, J. M. & L. A..... 79                   | Swett, A. L. Iron Works.... 25           |
| Best Light Co..... 30                      | Excelsior Steel Furnace Co.. 28          | Kelsey Heating Co..... 38                            | Ostrander, W. R. & Co..... 71                  | Taylor Co., N. & G..... 84               |
| Bibb, B. C. Stove Co..... 11               | Falkenau-Stinclair Mch. Co. 81           | Kemp, C. M. Mfg. Co..... 34                          | Patric Furnace Co..... 21                      | Thatcher Furnace Co..... 24              |
| Bickelhaupt, G. Skylight Wks 77            | Fenn, Geo. E..... 72                     | Kewanee Boiler Co..... 20                            | Peck, Stow & Wilcox Co.... 81                  | Troy Nickel Works..... 32                |
| Bliss, E. W. Co..... 82                    | Floyd, Wells & Co..... 18                | Kieley & Mueller..... 1                              | Peck-Williamson Co..... 22                     | U. S. Register Co., Ltd.... 12           |
| Blodgett, G. S. Co..... 25                 | Follansbee Bros. Co..... 1               | Kilne, J. M..... 34                                  | Pell, John Enamelling Wks.. 31                 | Utica Heater Co..... 22                  |
| Born Steel Range Co..... 9                 | Forest City Fdry. & Mfg. Co. 25          | Koven, L. O. & Bro..... 36                           | Perkins, J. L. & Co..... 72                    | Valentine, M. D. & Bro. Co.. 33          |
| Boynton Furnace Co..... 20                 | Forest City Paint & Varnish Co..... 73   | Kramer Bros..... 30                                  | Pierce, Butler & Pierce Mfg. Co..... 25        | Vedder Pattern Works..... 31             |
| Brand Stove Co..... 19                     | Foster, F. W. Mfg. Co..... 37            | Lawless, John H..... 36                              | Pittsburgh Stove & Range Co 4                  | Vogel, William & Bros..... 71            |
| Bray, J. & Co..... 73                      | Frard, Martin J. & Co..... 79            | Lawrence-Letts Elbow Co... 32                        | Pocock, Oliver..... 80                         | Walte, Raulet & Co..... 83               |
| Bridgeport Crucible Co..... 83             | Friedley & Voshardt..... 78              | Lennox Manufacturing Co.. 29                         | Portsmouth Stove and Range Co..... 4           | Walker & Pratt Mfg. Co.... 23            |
| Brien Heater Co..... 25                    | Frank, I. P..... 84                      | McClure & Co..... 84                                 | Quincy Fdry. & Novelty Co. 11                  | Walworth Mfg. Co..... 1                  |
| Bruce & Cook..... 77&84                    | Front Rank Steel Furnace Co 20           | McSherry, Chas..... 81                               | Reading Stove Works..... 14                    | Washburne, E. G. & Co.. 72&79            |
| Buffalo Forge Co..... 80                   | Fuller & Warren Co..... 1                | Magee Furnace Co..... 1                              | Richmond Co..... 17                            | Waterbury Brass Co..... 1                |
| Burton, W. J. & Co..... 26                 | Galesburg Cornice Works... 79            | March-Brownback Stove Co. 19                         | Robertson Mfg. Co..... 80                      | Weir Stove Co..... 84                    |
| Callahan, Geo. & Co..... 37                | Galt, John & Sons..... 73                | Marcy Stove Repair Co.... 33                         | Robinson Furnace Co..... 24                    | Weiss, H. & Co..... 83                   |
| Canton Steel Roofing Co..... 79            | Genuine Bangor Slate Co.... 73           | Marston, I. G. & Co..... 34                          | Robinson, J. M. & Co..... 83                   | Whaley-Totten Co..... 74                 |
| Carroll, J. B..... 34                      | Giblin & Co..... 16                      | Matthews, H. A. Mfg. Co.... 28                       | Rochester Radiator Co..... 28                  | Wheeler W. A..... 83                     |
| Castle, Wilmot & Co..... 29                | Glessel, Henry & Co..... 37              | Metropolis Sheet Metals & Stove Repairing Co..... 12 | Rutland Fire Clay Co..... 32                   | White, Warner Co..... 29                 |
| Champlou Steel Range Co.... 27             | Globe Iron Rfg. & Corrugating Co..... 77 | Meurer Bros. Co..... 75                              | St. Louis Enamelling Co.... 13                 | Willard, Wm. G..... 12                   |
| Chattanooga Steel Roofing Co..... 81       | Globe Ventilator Co..... 72              | Meyer, F. & Bro. Co..... 22                          | Salem Nail Co..... 72                          | Williams Stove Lining Co.. 32            |
| Chicago Furnace Supply Co. 26              | Gobelle Pattern Co..... 31               | Michigan Stove Co..... 7                             | Saunders', D. Sons..... 36                     | Wister, L. & R. & Co..... 84             |
| Cincinnati Stamping Co.... 77              | Gordon, W. J..... 83                     | Millar, Chas. & Son Co..... 84                       | Schill Bros. Co..... 10                        | Wolff, L. Mfg. Co..... 34                |
| Clark, Geo. M. & Co..... 5                 | Gorton & Lidgerwood Co.... 1             | Milwaukee Pattern Works... 34                        |                                                | Wood, Alan Co..... 77                    |
| Clark, Henry N. Co..... 28                 |                                          |                                                      |                                                | Wood & Bishop Co..... 27                 |
| Clark Novelty Co..... 71                   |                                          |                                                      |                                                | Young, Jos. H..... 34                    |
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American Radiator Co., Chicago, Ill.  
Gurney Heater Mfg. Co., Boston, Mass.  
Mott, J. L. Iron Works, 84 Beekman St.,  
New York.  
Pierce, Butler & Pierce Mfg. Co., Syracuse, N. Y.
- Range Boilers.**  
Koven, L. O. & Bro., 50 Cliff St., N. Y.  
Wolff, L. Mfg. Co., Chicago, Ill.
- Reflectors.**  
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Dighton Furnace Co., Taunton, Mass.  
Hart & Cooley Co., New Britain, Conn.  
Independent Register Co., Cleveland, Ohio.
- Registers, Draft.**  
Matthews, H. A. Mfg. Co., Seymour, Ct.
- Registers, Hot Air.**  
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Eller, J. H. & Co., Canton, O.  
Globe Iron Roofing & Corrugating Co.,  
Cincinnati, O.  
Gummey McFarland & Co., Phila., Pa.  
New York Iron Roofing & Cor. Co.,  
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- Roofing Nails.**  
Salem Nail Co., 279 Pearl St., N. Y.
- Roofing Seamer.**  
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- Roofing Slate.**  
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Galt, John & Sons, 253 Broadway, N. Y.  
Genuine Bangor Slate Co., Easton, Pa.  
Johnson, E. J. & Co., 38 Park Row, N. Y.  
O'Halloran & Jacobs, Pittsburgh, Pa.
- Sap Spouts.**  
Miller, C. & Son Co., Utica, N. Y.
- Screens.**  
Harrington & King Perforating Co.,  
Chicago, Ill.
- Screws.**  
Hubbell, Harvey, Bridgeport, Ct.
- Scuttle Opener.**  
Bickelhaupt, G. Skylight Works, 243 W. 47th St.,  
N. Y.
- Sewer Pipe.**  
Rutland Fire Clay Co., Rutland, Vt.
- Shaped Iron and Steel, Galvanized.**  
Am. Galvanizing Wks., Chicago, Ill.
- Shears, Sheet Metal.**  
Buffalo Forge Co., Buffalo, N. Y.  
McSherry, Chas., Pittsburgh, Pa.  
Peck, Stow & Wilcox Co., 27 Murray St.,  
N. Y.
- Sheet Metal Machinery.**  
Bertsch & Co., Cambridge City, Ind.  
Bliss, E. W. Co., Brooklyn, N. Y.  
Double Truss Cornice Brake Co., Buffalo, N. Y.  
Falkenau-Sinclair Mch. Co., Phila., Pa.  
Gordon, W. J., Phila., Pa.  
Heartley Machine Variety Iron & Tool Works, Toledo, O.  
Keene, Geo. C. & Co., Cincinnati, O.  
Miner & Peck Mfg. Co., New Haven, Conn.  
Niagara Machine & Tool Wks., Buffalo, N. Y.  
Ohl, Geo. A. & Co., Newark, N. J.  
Peck, Stow & Wilcox Co., 27 Murray St.,  
New York.  
Pocock, O., Cincinnati, O.  
Robinson, J. M. Mfg. Co., Cincinnati, Ohio.  
Stiles & Parker Press Co., Brooklyn, N. Y.



**Sheets, Aluminum Coated Steel.**  
Steel & Iron Aluminum Coating Co.,  
Connellsville, Pa.**Sheets, Galvanized.**

American Sheet Steel Co., New York.  
Bruce & Cook, 186 to 190 Water St.,  
N. Y.  
McClure & Co., Pittsburgh, Pa.  
Osborn, J. M. & L. A., Cleveland, O.  
Wood Alan Co., Philadelphia, Pa.

**Sheets, Iron and Steel.**

American Sheet Steel Co., New York.  
Bruce & Cook, 186 to 190 Water St.,  
N. Y.  
Coe, Jas. A. & Co., Newark, N. J.  
Follansbee Bros. Co., Pittsburgh, Pa.  
Gummey, McFarland & Co., Phila., Pa.  
Osborn, J. M. & L. A., Cleveland, O.  
Walte, Rauler & Co., Boston, Mass.  
Wood Co., Alan, Philadelphia, Pa.

**Shingles and Tiles, Metallic.**

Chattanooga Steel Roofing Co., Chat-  
tanooga, Tenn.  
Cincinnati Stamping Co., Cincinnati, O.  
Corright Metal Roofing Co., Philadel-  
phia, Pa.  
Meurer Bros. Co., Brooklyn, N. Y.  
Montross Metal Shingle Co., Camden,  
N. J.

**Shot.**

Colwell Lead Co., 43 Centre St., N. Y.

**Siding.** (See Roofing and Siding.)**Skylights.**

Canton Steel Roofing Co., Canton, O.  
Chattanooga Steel Roofing Co., Chat-  
tanooga, Tenn.  
Drouve, G. Co., Bridgeport, Conn.  
Giesburg Corrice Works, Galena, Ill.  
Mullins, W. H., Salem, O.

**Slaters' Tools.**

Galt, Jno. & Sons, 253 Broadway, N. Y.  
Salem Nail Co., 279 Pearl St., N. Y.

**Snow Guards.**

Clason Arch. Metal Works, Provid-  
ence, R. I.

**Solder.**

Bruce & Cook, 186 to 190 Water St., N. Y.  
Follansbee Bros. Co., Pittsburgh, Pa.  
Gummey, McFarland & Co., Phila., Pa.  
McClure & Co., Pittsburgh, Pa.  
Meurer Bros. Co., Brooklyn, N. Y.  
Taylor, N. & G. Co., Philadelphia, Pa.

**Soldering Coppers.**

Waterbury Brass Co., 122 Centre St.,  
N. Y.

**Soldering Furnaces.**

Clark Novelty Co., Rochester, N. Y.

**Speaking Tubes and Whistles.**

Ostrander, W. R. & Co., 22 Dey Street,  
N. Y.

**Specialties, Sheet Metal.**

Vogel, Wm. & Bros., Brooklyn, N. Y.

**Stairway, Sheet Copper and**

Bronze.  
Mullins, W. H., Salem, O.

**Steam and Gas Fitters' Supplies.**

Curtis & Curtis Co., Bridgeport, Conn.  
Walworth Mfg. Co., Boston, Mass.

**Steam and Water Engineering  
and Regulating Specialties.**

Kleley & Mueller, 7-11 West 13th St.,  
N. Y.

**Steam Traps.**

Mott, J. L. Iron Works, 84-90 Beekman  
St., N. Y.

**Steel Stamps and Stencil Dies.**

Schwerdtle Stamp Co., Bridgeport, Ct.

**Stove Cement.**

Dixon, Jos. Crucible Co., Jersey City,  
N. J.  
Rutland Fire Clay Co., Rutland, Vt.

**Stove Linings.**

Bridgeport Crucible Co., Bridgeport,  
Conn.  
Hessler, H. E. Co., Syracuse, N. Y.  
Marey Stove Repair Co., 74 Beekman  
St., N. Y.  
Presbrey Stove Lining Co., Taunton,  
Mass.  
Rutland Fire Clay Co., Rutland, Vt.  
Valentine, M. D. & Bro. Co., Wood-  
bridge, N. J.  
Williams Stove Lining Co., Taunton,  
Mass.

**Stove and Metal Polish.**

Ayling Bros., Chicago, I. I.  
Hoffman, Geo. W., Indianapolis, Ind.  
Nickel Plate Stove Polish Co., Chicago,  
Ill.  
Rutland Fire Clay Co., Rutland, Vt.

**Stove Patterns.**

Cope, G. W., Detroit, Mich.  
Gobeille Pattern Co., Cleveland, O.  
Milwaukee Pattern Works, Mil-  
waukee, Wis.  
Vedder Pattern Works, Troy, N. Y.

**Stove Repairs.**

Clark, Henry N. Co., Boston, Mass.  
Heath, C. C. & Co., Baltimore, Md.  
Howes, S. M. Co., Boston, Mass.  
Marey Stove Repair Co., 74 Beekman  
St., N. Y.  
Metropolis Sheet Metals & Stove Re-  
pairing Co., Newark, N. J.  
Troy Nickel Works, Troy, N. Y.

**Stove Trimmings, &c.**

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Troy Nickel Works, Troy, N. Y.

**Stove Trucks.**

Arcade Mfg. Co., Freeport, Ill.  
Howes, S. M. Co., Boston, Mass.

**Stoves and Ranges.**

Barstow Stove Co., Providence, R. I.  
Beckwith, P. D., Est. of, Dowagiac,  
Mich.  
Bergstrom Bros. & Co., Neenah, Wis.  
Bibb, B. C. Stove Co., Baltimore, Md.  
Born Steel Range Co., Cleveland, O.  
Boynton Furnace Co., 207 Water Street,  
New York.  
Brand Stove Co., Milwaukee, Wis.  
Champion Steel Range Co., Cleveland,  
Ohio.  
Clark, Geo. M. & Co., Chicago, Ill.  
Dighton Furnace Co., Taunton, Mass.

**Floyd, Wells & Co., Royersford, Pa.**

Fuller & Warren Co., Troy, N. Y.  
Giolin & Co., Utica, N. Y.  
Joliet Stove Works, Joliet, Ill.  
Maree Furnace Co., Boston, Mass.  
March Brownback Stove Co., Potts-  
town, Pa.  
Michigan Stove Co., Chicago, Ill.  
Nye, A. T. & Son Co., Marietta,  
Pittsburgh Stove & Range Co., Pitts-  
burgh, Pa.  
Portsmouth Stove & Range Co., Ports-  
mouth, O.  
Quincy Fdry. & Novelty Co., Quincy,  
Ill.  
Reading Stove Works, Reading, Pa.  
Richmond Company, Norwich, Conn.  
St. Louis Enameling Co., St. Louis, Mo.  
Schill Bros. Co., Crestline, O.  
Schneider & Trenkamp Co., Clevel-  
and, O.  
Sheppard, Isaac A. & Co., Phila., Pa.  
Smith & Anthony Co., Boston, Mass.  
Somerset Stove Foundry Co., Somerset,  
Mass.  
Stanford Foundry Co., Stamford, Ct.  
Thatcher Furnace Co., 219 Water St.,  
N. Y.  
Walker & Pratt Mfg. Co., Boston, Mass.  
Weir Stove Co., Taunton, Mass.  
White, Warner Co., Taunton, Mass.  
Willard, Wm. G., St. Louis, Mo.

**Stoves and Ranges, Gas.**

Adler H. & Co., Pittsburgh, Pa.  
Clark, Geo. M. & Co., Chicago, Ill.  
Dangler Stove & Mfg. Co., Cleveland,  
Ohio.  
Dighton Furnace Co., Taunton, Mass.  
Howes, S. M. Co., Boston, Mass.  
Metropolis Sheet Metals & Stove Re-  
pairing Co., Newark, N. J.  
Monarch Stove & Mfg. Co., Mansfield, O.  
Standard Lighting Co., Cleveland, O.

**Stoves and Ranges, Oil, Vapor  
and Gasoline.**

Clark, Geo. M. & Co., Chicago, Ill.  
Dangler Stove & Mfg. Co., Cleveland,  
Ohio.  
Heath, C. C. & Co., Baltimore, Md.  
Monarch Stove & Mfg. Co., Mansfield, O.  
Schneider & Trenkamp Co., Clevel-  
and, O.  
Standard Lighting Co., Cleveland, O.

**Tank Heaters.**

American Radiator Co., Chicago, Ill.

**Tanks, Steel and Wood.**

Forwards, J. H., 59 Park Place, N. Y.

**Tin Plates.**

American Tin Plate Co., New York.  
Taylor, N. & G. Co., Phila., Pa.

**Tinners' Tools, Machines and  
Supplies.**

Berger Bros. Co., Phila., Pa.  
Bertsch & Co., Cambridge City, Ind.  
Bliss, E. W. Co., Brooklyn, N. Y.  
Bruce & Cook, 186 to 190 Water St.,  
New York.  
Follansbee Bros. Co., Pittsburgh, Pa.  
Keene, Geo. C. & Co., Cincinnati, O.  
Meurer Bros. Co., Brooklyn, N. Y.  
Nagara Machine & Tool Wks., Buffalo,  
N. Y.  
Ohl, Geo. A. & Co., Newark, N. J.  
Peck, Stow & Wilcox Co., 27 Murray  
St., New York.

**Stiles & Parker Press Co., Brooklyn,  
N. Y.**

Weiss, H. & Co., 20 Cliff St., N. Y.

**Tinners' Trimmings.**

Vogel, Wm. & Bros., Brooklyn, N. Y.

**Tin Plate.**

American Tin Plate Co., New York.  
Bruce & Cook, 186 to 190 Water St.,  
New York.  
Coe, Jas. A. & Co., Newark, N. J.  
Follansbee Bros. Co., Pittsburgh, Pa.  
Gummey, McFarland & Co., Phila., Pa.  
McClure & Co., Pittsburgh, Pa.  
Meurer Bros. Co., Brooklyn, N. Y.  
Osborn, J. M. & L. A., Cleveland, Ohio.  
Taylor, N. & G. Co., Philadelphia, Pa.  
Walte, Rauler & Co., Boston, Mass.

**Tool Grinder.**

Robertson Mfg. Co., Buffalo, N. Y.

**Tools and Machines, Steam and  
Gas Fitters'.**

Armstrong Mfg. Co., Bridgeport, Conn.  
Curtis & Curtis Co., Bridgeport, Conn.  
Saunders' D. Sons, Yonkers, N. Y.

**Torches, Plumbers.**

Clayton & Lambert Mfg. Co., Detroit,  
Mich.

**Trade Schools.**

New York Trade School, 1st Ave., 67th  
and 68th Streets, N. Y.

**Valves.**

Am. Steam Gage & Valve Mfg. Co.,  
Boston, Mass.  
Crosby Steam Gage & Valve Co., Bos-  
ton, Mass.  
Jenkins Bros., 71 John St., New York.  
Monash Yonker Co., Chicago, Ill.  
Morgan & Co., Chicago, Ill.  
Norwall Mfg. Co., Chicago, Ill.

**Ventilating Apparatus.**

American Blower Co., Detroit, Mich.  
Buffalo Forge Co., Buffalo, N. Y.

**Ventilators and Chimneys.**

Iwan Bros., Streator, Ill.

**Ventilators and Chimney Caps.**

Berger Bros. Co., Phila., Pa.  
Buffalo Forge Co., Buffalo, N. Y.  
Fenn, Geo. E., Boston, Mass.  
Globe Ventilator Co., Troy, N. Y.  
Kramer Bros., Dayton, O.  
Meurer Bros. Co., Brooklyn, N. Y.  
Washburne, E. G. & Co., 46 Cortlandt  
St., New York.

**Washers, Valves, &c.**

Marston, L. G. & Co., Boston, Mass.

**Water Coolers.**

National Enameling & Stamping Co.,  
78 Beekman St., N. Y.

**Water Closets.**

Adee, Fred. & Co., 90 Beekman St., N. Y.  
Colwell Lead Co., 63 Centre St., N. Y.

**Water Fronts.**

Clark, Henry N. Co., Boston, Mass.

**Water Heaters.**

Kemp, J. M. Mfg. Co., Baltimore, Md.

**Wind Gates.**

Miner & Peck Mfg. Co., New Haven, Ct.

SEE ALPHABETICAL INDEX, PAGE 66.

# THE METAL WORKER.

With which is incorporated The Stove and Tin Trade Journal, The Sheet Metal Builder, and Metal.

Published Weekly at the Following Subscription Price:

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# LABOR EXCHANGE.

Notices under this heading of reasonable length are inserted free of charge. Only those relating to employment are admitted. Write distinctly on one side of paper only, and do not use postal cards.

Original letters of reference should not be inclosed with replies to advertisements appearing in these columns as they are frequently mislaid and lost. A copy of the reference will serve the purpose.

## HELP WANTED.

First-class TINMAN who understands plumbing in a country shop; a steady job the year around to the right man; must be strictly sober; no other need apply. A. S. Carroll, Hobart, N. Y. Aug. 30

FOREMAN for sheet iron department; must be competent and active, understand directing men and laying out work; do not apply unless you can qualify; wages, \$5 per day. "Fore," care *The Metal Worker*, New York. Aug. 30

Two BENDERS for power break; must be A1 men and hustlers; wages, \$4 per day. "Power Break," care *The Metal Worker*, New York. Aug. 30

Two good CORNICE and SHEET METAL WORKERS; state age, experience and wages expected; at once. N. E. Steel Roofing Company, Worcester, Mass. Aug. 30

A first-class TINMAN for inside and outside work; one who understands plumbing and electric wiring preferred; give reference, wages, &c. Box 45, Bridgeton, Maine. Aug. 30

Good CORNICE MAKERS; steady work to good men. Bleeker & Steinberg, 62 to 66 Shipman street, Newark, N. J. Aug. 30

A1 WORKING FOREMAN in jobbing department tinware factory; must be well recommended. "Box," care *The Metal Worker*, New York. Aug. 30

First-class TINNERS for inside and outside work; steady work the year round for first-class mechanics; no strike; wages, 30 cents per hour. Philip Christmann & Sons, Buffalo, N. Y. Aug. 30

Good TINMAN. Tracy Brothers, Ballston Spa, N. Y. Aug. 30

An A1 TINSMITH for all round jobbing; capable of cutting new patterns; sober and reliable; steady work and good wages to right man; Eastern Massachusetts. "D," care *The Metal Worker*, New York. Aug. 30

First-class TINNERS for getting out and erecting hot air furnaces; wages, \$3 for eight hours; none but temperate, reliable and active men need apply, and to such we can offer a good job. Phillips Heating & Mfg. Company, 510 South Spring, Los Angeles, Cal. Aug. 30

A good, reliable man who can work and figure on furnaces, hot water, plumbing, &c.; steady work the year round. B. Seigel, Tupper Lake, N. Y. Aug. 30

A first-class TINNER who has had experience in plumbing and heating; steady job and good wages to a man between 30 and 40 years old; must be a steady, sober man. Joe Braden, 2834 Grand avenue, Minneapolis, Minn. Aug. 30

Five or six first-class PLUMBERS to work, nonunion shop; wages \$3 to \$4 per day, according to ability; steady work. M. C. Vandiver, Atlanta, Ga. Aug. 30

Several good SHEET IRON WORKERS as road mechanics; those used to blow pipe work preferred; state wages expected, age and where last employed. Apply the Ohio Blow Pipe Company, corner Seneca and Michigan streets, Cleveland, Ohio. Aug. 30

A PATTERN MAKER familiar with block patterns and flask making; also a filer and fitter. The Ohio Foundry Company, Steubenville, Ohio. Aug. 30

A fine opportunity for a steady, sober and industrious man; must be a first-class mechanic and pattern cutter; to act as WORKING FOREMAN in a modern and up to date shop; class of work done, heating, ventilation and blow pipe work; one accustomed to these branches preferred; state qualifications, age and wages expected; immediate engagement expected. The Ohio Blow Pipe Company, 54 Michigan street, Cleveland, Ohio. Aug. 30

Boy wanted with one year's experience at tinsmithing. D. I. O'Brien, 1229 Fifth avenue, Brooklyn, N. Y. Aug. 30

Ten first-class SHEET METAL WORKERS; those accustomed to metal window work preferred. Rasner & Dinger Company, Pittsburgh, Pa. Aug. 23

A first-class TINSMITH for inside and outside work; none but a sober and reliable man need apply; a steady job the year round to the right man; state age, experience and wages wanted. M. J. Shaut, Hornellsville, N. Y. Aug. 23

GALVANIZED SHEET IRON WORKERS. Apply to Geo. Mentlon, foreman, B. F. Sturtevant Company, Jamaica Plain, Boston, Mass. Aug. 23

TINSMITH and SHEET METAL WORKER; must be first-class workman, temperate, some knowledge of piping preferred; state wages and experience; steady job to right man. Geo. W. Huff, Sanford, Me. Aug. 23

TINNER wanted at once; young, single man, good on roofing, spouting and job work; fair knowledge of furnace work; must be sober and steady; steady job to right party. Albert Lehmann, 2593 Union street, Chicago, Ill. Aug. 23

SALESMAN to travel in Western Pennsylvania, Ohio, Indiana and Illinois, by manufacturers of a large staple line of hardware; one well acquainted with the territory preferred; state salary expected and give references. "Hardware Manufacturers," care *The Metal Worker*, New York. Aug. 23

A traveling SALESMAN on salary and expenses for Southern territory; must have traveled years in that section; no other need apply; one experienced in enameled ware preferred; letters to receive attention must state age and detailed previous connections. "H. K. & F.," care *The Metal Worker*, New York. Aug. 23

SHOP CLERK; a man of experience and a man who is competent to take charge of all material that leaves the shop for contracts or day work where there are from 40 to 60 men employed, keep men's time and charge up all material on the slips; none but competent, sober and reliable men need apply; steady work for right man and good wages; in Pennsylvania town. Address, in your own handwriting. "F. R.," care *The Metal Worker*, New York. Aug. 23

TINSMITH; must be a first-class furnaceman and thoroughly familiar with all branches of the business; steady job to a good man; no others need apply; state wages and experience. The C. H. Avery Company, Nashua, N. H. Aug. 23

A steady, reliable FURNACEMAN and SHEET METAL WORKER; quick and first-class, temperate and reliable; state age and experience; the right party can have this position as long as he wants it. "Heating," Binghamton, N. Y. Aug. 23

Competent man for laying out heavy sheet iron work, such as brithchings and smoke stack work. American Blower Company, Detroit, Mich. Aug. 23

A good, reliable TINNER, ROOFER and FURNACEMAN at once. P. Moran & Son, Lockport, N. Y. Aug. 23

TRAVELING SALESMAN covering Central and Southern New York, to handle as a side line a good standard line of tin goods; no samples to carry. "Side Line," care *The Metal Worker*, New York. Aug. 23

A first-class TINNER, SLATER and FURNACEMAN; good on inside and outside work; must understand country work; also a first-class PLUMBER; must be competent to handle any plumbing or steam heating work; good wages to reliable men; no others need apply. W. H. Stoyke, Huntington, N. Y. Aug. 23

September 1, a first-class STOVE PATTERNER FITTER; must be steady, sober and reliable; state age and experience; permanent position to right party; give references and wages expected. The W. J. Loth Stove Company, Waynesboro, Va. Aug. 23

PLUMBER, first-class, accustomed to windmill work preferred; steady work to the right man; references. B. F. Lockhill, Columbus, N. J. Aug. 23

A first-class PLUMBER, good at jobbing; one who has some knowledge of tin work preferred; state wages wanted for a steady job. W. A. Barry & Co., Kittanning, Pa. Aug. 23

SLATERS, TINNERS and CORNICE MAKERS; reliable men. Apply to H. C. Hines & Co., Detroit, Mich. Aug. 16

A first-class TINSMITH with experience or cornice and furnace work; state experience; steady work the year around. Bruno Martin & Son, 814 Janes avenue, Saginaw, Mich. Aug. 16

SALESMAN to sell mlca as a side line; liberal commission and no samples. "Mlca," care *The Metal Worker*, New York. Aug. 9

Two first-class TRAVELING SALESMEN of good character, familiar with steam and hot water heating apparatus; state experience, age, &c. Gurney Heater Mfg. Company, Boston, Mass. Aug. 9

## SITUATIONS WANTED.

By a young man with ten years' experience at plumbing and tinning; license for Massachusetts. L. Hemenway, Pittsfield, Mass. Aug. 30

By an experienced SALESMAN in stoves, furnaces and kitchen furnishing goods; have had six years' retail experience and nine years as traveling salesman; first-class reference. G. A. Jones, 8 Cross street, Somerville, Mass. Aug. 30

With range and furnace house in factory; ten years' experience, with thorough knowledge of foundry practice; young and energetic. "Ranges," care *The Metal Worker*, New York. Aug. 30

By a first-class PLUMBER; best of reference; city or country. "H. M.," care *The Metal Worker*, New York. Aug. 30

On road selling heating and plumbing apparatus for some reliable firm. "T. T.," care *The Metal Worker*, New York. Aug. 30

A practical PLUMBER wants steady employment; city or country; quick and neat on all lead work; sober and willing; 3 years in present job; 14 years' experience. "J. S. Plumber," care Rudman, 58 and 60 Fulton street, New York. Aug. 30

By a young man, 21 years old, of good habits, a student of the International Correspondence Schools; would like a position as a PLUMBER'S or TINSMITH'S HELPER where I can learn the trade; eight months' experience; A1 reference. Post Office Box 412, Gouverneur, St. Lawrence County, N. Y. Aug. 30

STOVE MANUFACTURERS, ATTENTION.—Wanted, a position as general superintendent, manager or foreman of molding or mounting department with some first-class stove foundry, by an American, age 46, who understands the business in all its details; highest reference. "A. B. C.," care *The Metal Worker*, New York. Aug. 30

By man 34 years old, practical PLUMBER, STEAM and HOT WATER FITTER; 15 years' experience; can figure and read plans; capable of doing all kinds of new and overhauling old work; understands handling men and a hustler; position as foundryman or take charge of shop about September 30. "Plumber and Fitter," Kittanning, Pa. Aug. 30

By reliable man as TINSMITH and ROOFER; inside and outside work; also sheet iron work; steady position. Harry Walk, 516 East Sixth street, New York. Aug. 30

By a strictly temperate young man with 15 years' experience in stoves and hardware. "Jones," care *The Metal Worker*, New York. Aug. 30

By experienced STOVE and RANGE SALESMAN, a line of medium priced ranges for St. Louis trade on commission basis; good reference. "St. Louis Trade," care *The Metal Worker*, 1205 Chemical Building, St. Louis, Mo. Aug. 30

As FOREMAN for steel range works; I understand all kinds of steel range pattern cutting and drafting; also manufacturing stoves, having had over 20 years' experience in the stove business; can give the very best reference. "R. F. A.," care *The Metal Worker*, Park Building, Pittsburgh, Pa. Aug. 30

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By young man, 27 years of age; have had five years' experience as foreman and pattern cutter and laying out cornice, skylight and bay window work; can estimate and work from plans; a good mechanic and draftsman. E. M. Williams, 514 Quincy street, Cleveland, Ohio. Aug. 30

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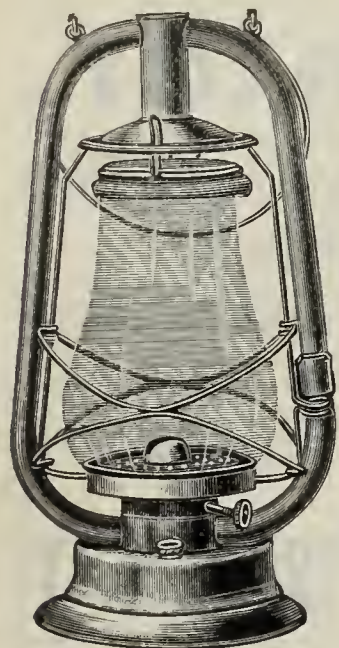
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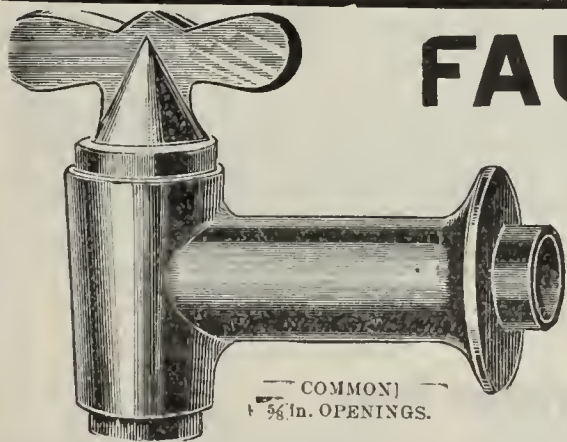


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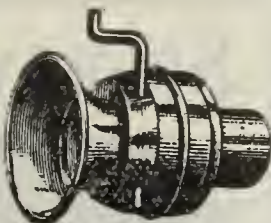
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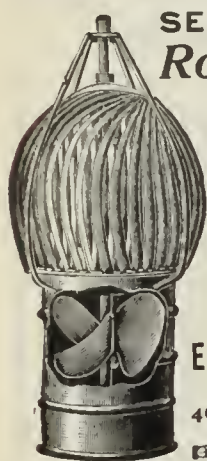
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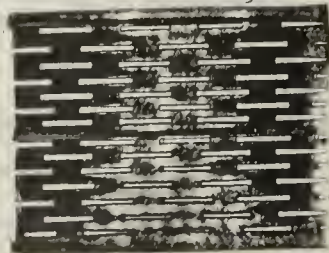


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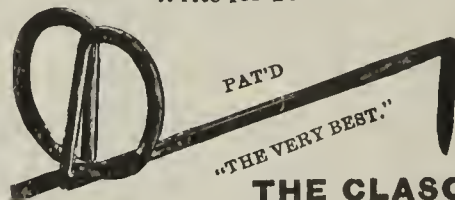
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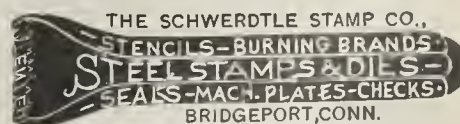
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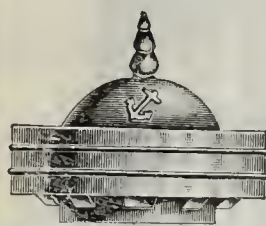
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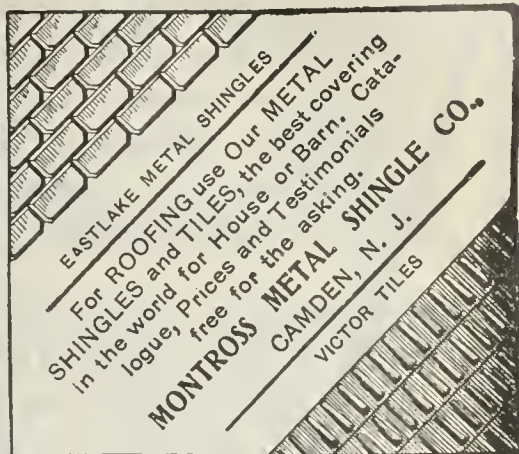
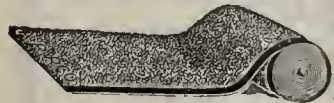
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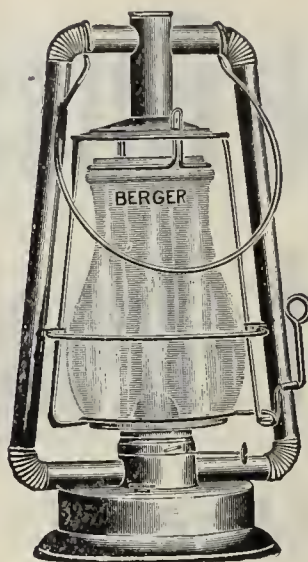


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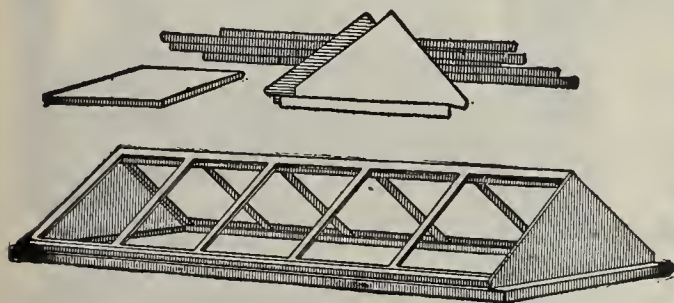
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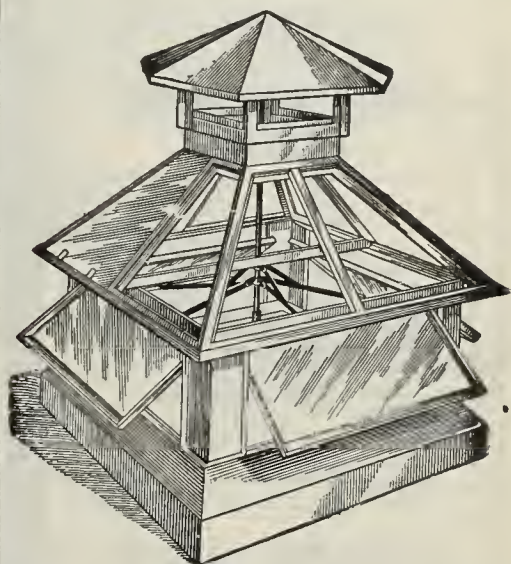
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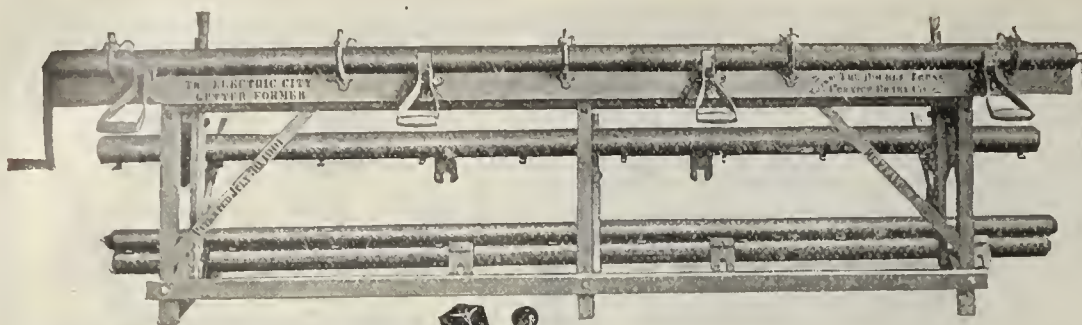
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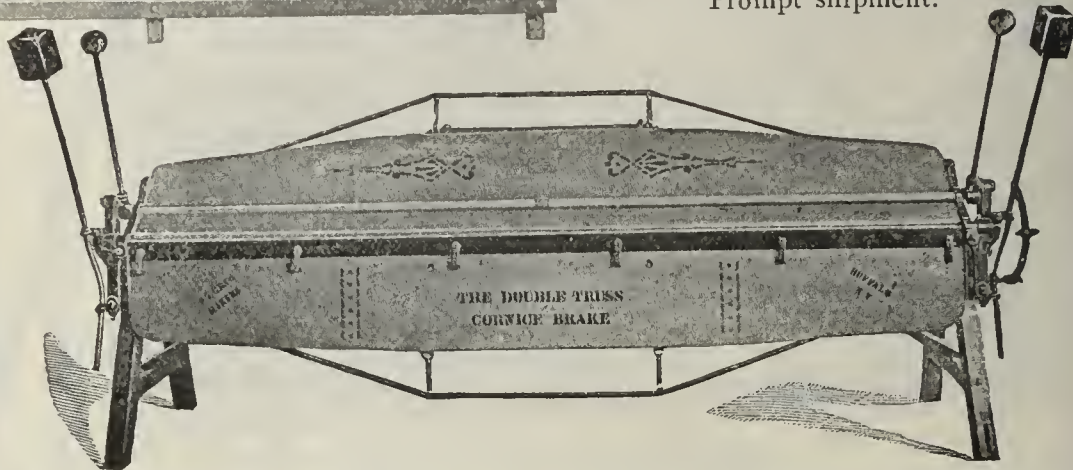


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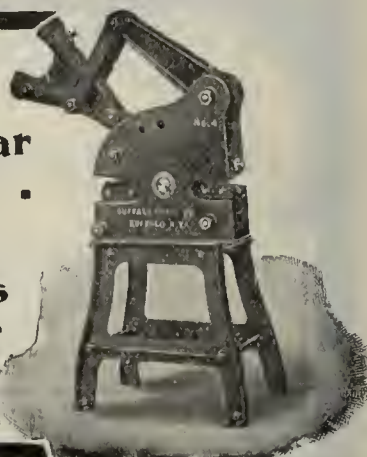
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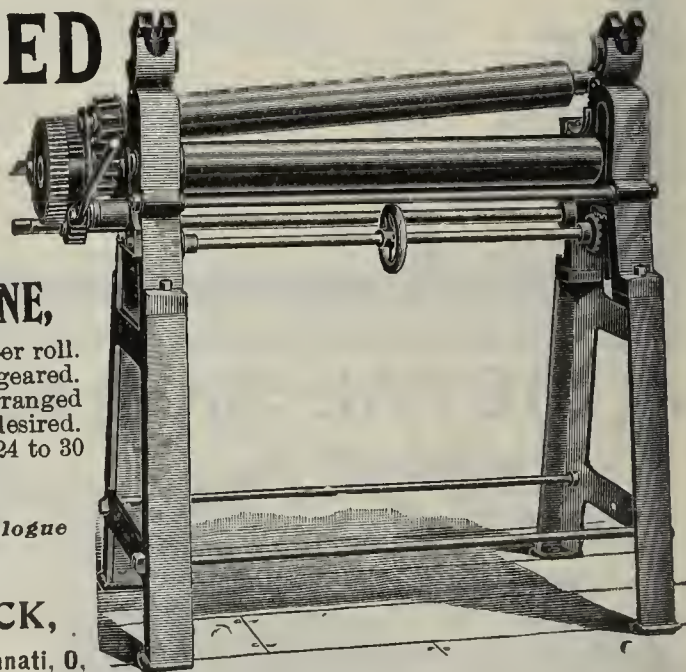
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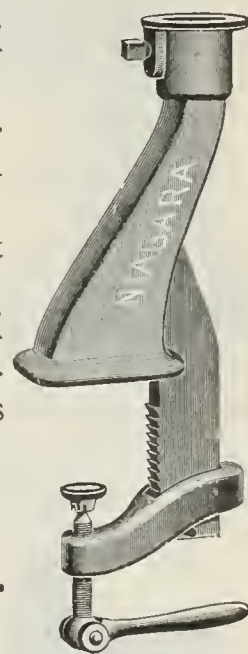
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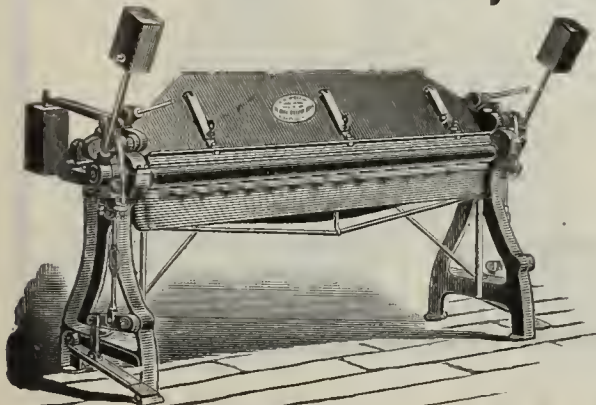
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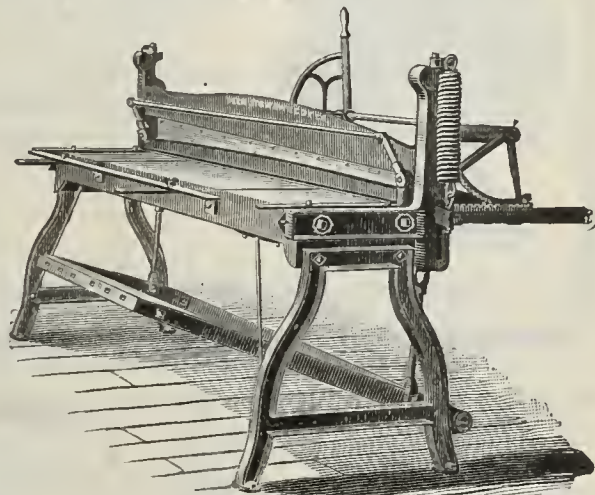
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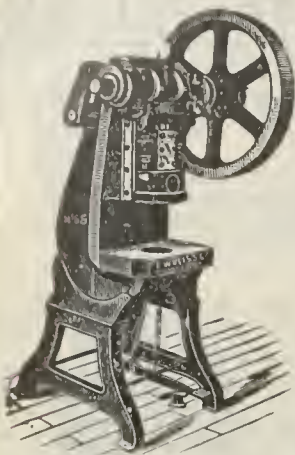


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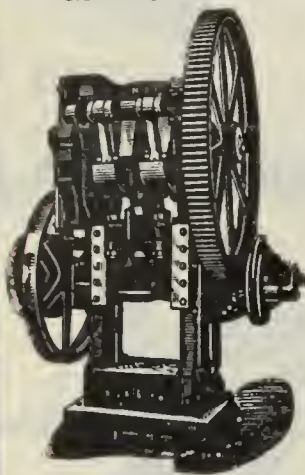


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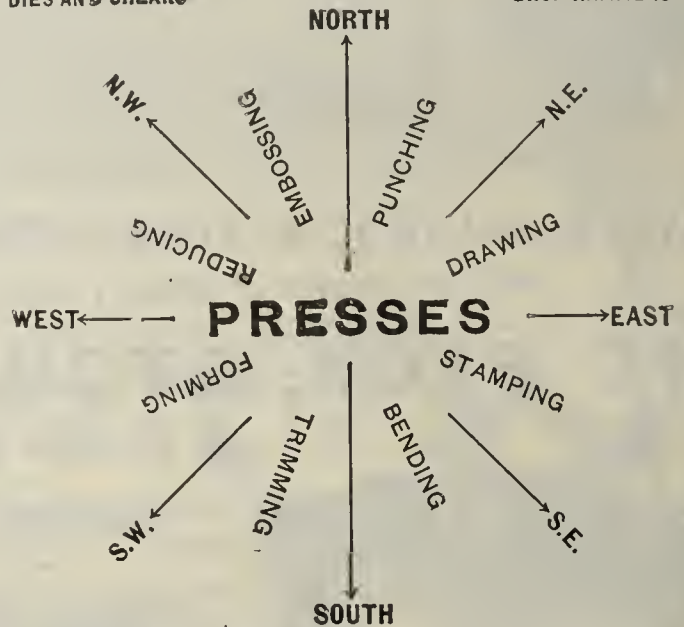
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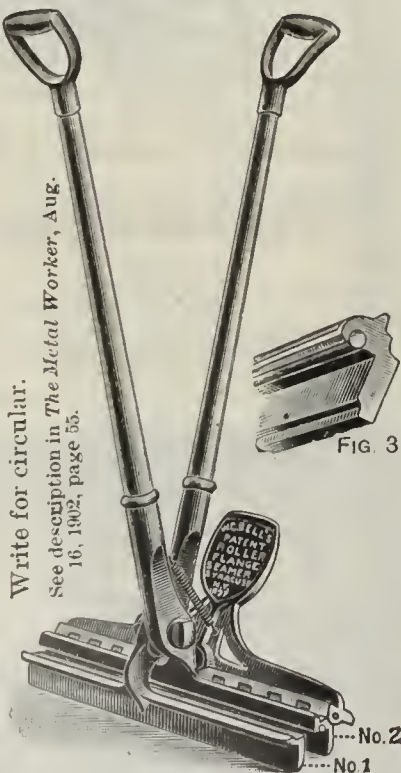
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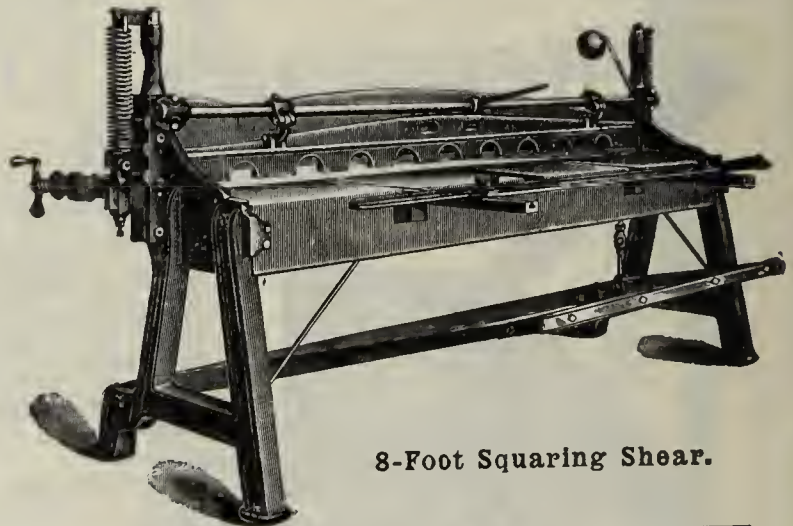
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Punches, Presses, Sheet Steel Lath Machines, Drop Presses, Draw Benches, and Special Machinery of all descriptions.



8-Foot Squaring Shear.

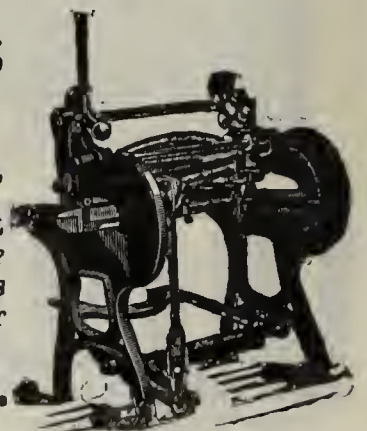
## Sheet Metal Tools

For any and all Purposes.

**SHEARS, PUNCHES, Etc.**

**SPECIAL SHEET METAL WORKING MACHINERY FROM SPECIFICATIONS PRODUCED ON SHORT NOTICE.**

Write for Prices and Descriptive Circulars.



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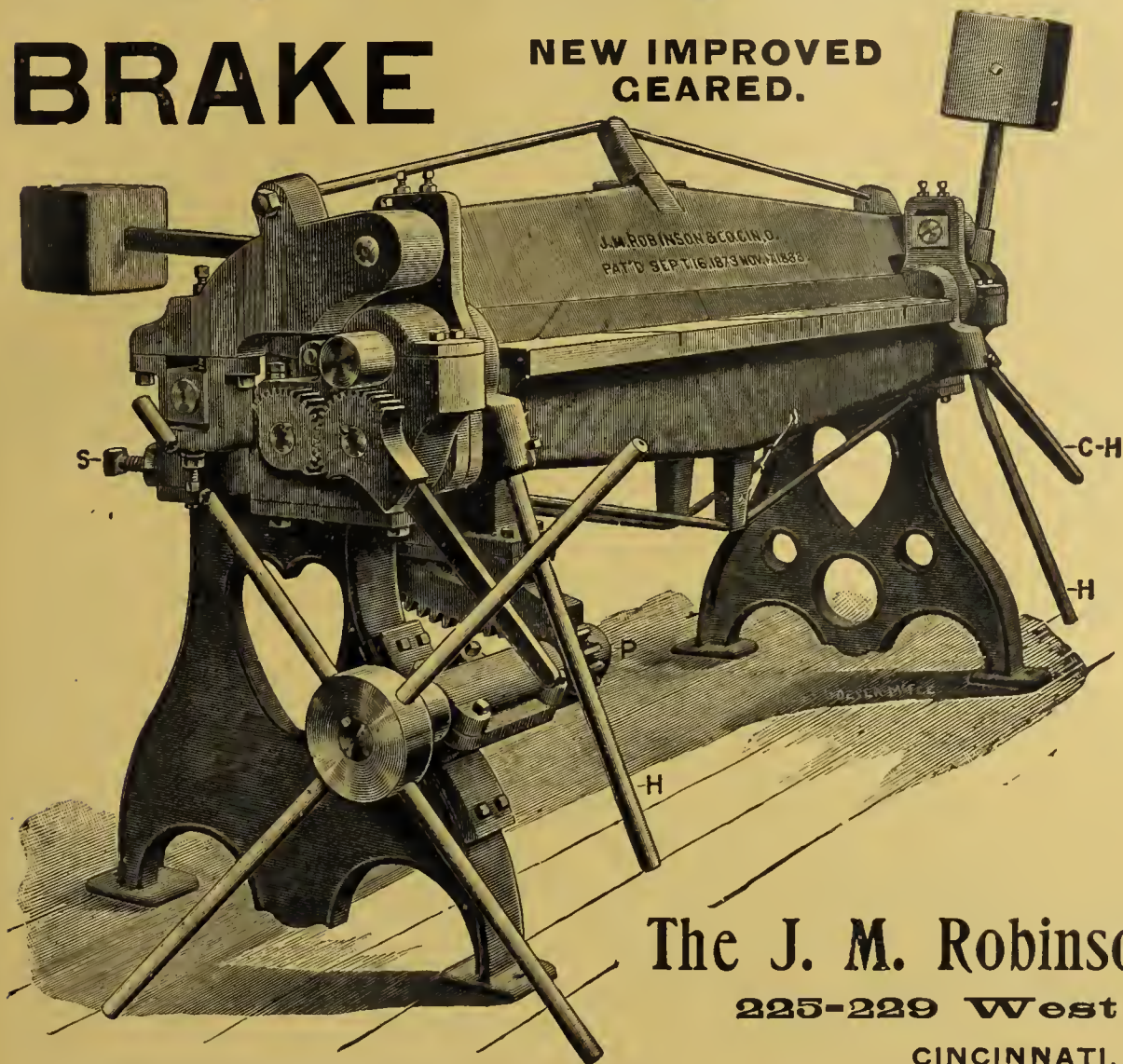
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# HAND POWER BRAKE

NEW IMPROVED  
GEARED.

6  
AND  
8  
FOOT.



Will bend No. 14 gauge and lighter, or when double geared with hand power will bend No. 10 gauge in 6 and 8 foot lengths. Write for descriptive circular and prices.

The J. M. Robinson Mfg. Co.,  
225-229 West 2nd St.,  
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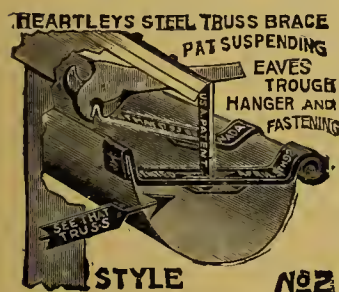
## STOVE AND RANGE MAKERS' Flanging Machine.

Machinery for  
the Production  
of Iron Roofing  
a specialty.

Geo. C. Keene  
& Co.,  
CINCINNATI, OHIO.  
Makers of the  
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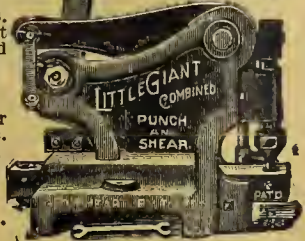


### HEARTLEY MACHINE, VARIETY IRON AND TOOL WORKS.



MANUFACTURERS.  
Saves 4 lbs. of solder and one-half day's labor on each cross used. We also make the Baker & Woodruff Hangers, Conductor Hooks, Ice Tongs, and Tools. Special Machinery and Tools for patent specialties and novelties, Bicycle and Metal Wheel Tools.  
**POWER AND HAND PUNCHING AND SHEARING MACHINERY.**  
Presses, Punches, Dies and Tools for sheet metal stamping and forming, etc.  
**GEO. W. HEARTLEY, Proprietor.**  
Jobber in Eaves Trough, Conductor Pipe and Tinners' Trimmings.  
901, 903, 905 Water Street,  
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THE LATEST  
AND BEST IMPROVED COMBINED  
PUNCH AND SHEAR.



STYLE

NO. 2

No solder is required to fasten the Cross Bar to this Eaves Trough.

**TINNERS' TOOLS, MACHINES and SUPPLIES.** Plumbers' Tools, Tinners' Hdwe., Soldering Flux, Salts, Coppers, Rosin, Roofing Cement, Rivets, Bolts, Screws, Slaters' Tools, Second-hand Machinery and **SKYLIGHT GEARING.**  
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20th Century Groover  
for Hand Power. We also make them  
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20th CENTURY GROOVER. Handiest out.  
Operated from one position. Automatic knock-out and Quick Return. Grooves 22 gauge.  
Write for circular. Made by  
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COMBINATION PRESSES and DIES,  
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**W. J. GORDON,**  
218 New Street,  
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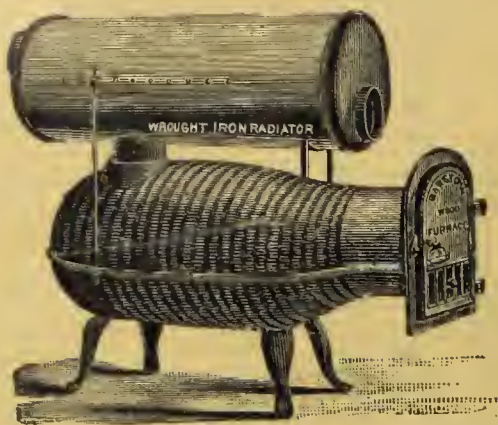
Sheet Iron,  
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Pig Tin and Copper.

Send us your inquiries.

**WAITE, RANLET & CO.,**  
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# TRASH WOOD



which usually goes to waste about the farm  
can be used in the

## BAY STATE WOOD FURNACE,

thus reducing the cost of fuel to a minimum.

## BARSTOW STOVE COMPANY,

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# "HENDY" SOLDER

MADE ONLY BY

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Makers of Fine Solders  
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Is a specialty in itself. We have been making a success of it for nearly half a century. Send data for estimates. Special designs on request.

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Dealers in all kinds of Iron and Steel Scrap.

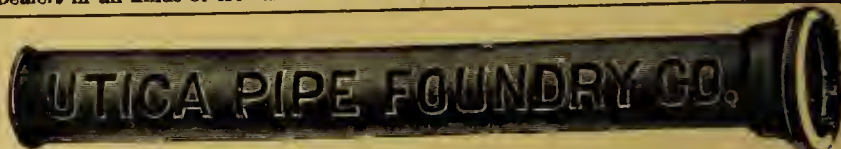
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186, 188 & 190 Water Street, and  
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"UTICA PIPE IS THE BEST." Cast Iron Soil Pipe. Cast Iron Water Pipe. Plumbers' Supplies and Lead Pipe.  
CHARLES MILLAR & SON CO., Selling Agents, Utica, N. Y.

A Low Priced Range  
with all of the



Improvements and  
Conveniences of the  
most costly.

Write for STAR HUB Circular.

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## A Popular Heater.

The Glenwood Hot Water Heater is unanimously approved and praised by dealers in heating goods because of new and practical improvements, especially the one piece construction which is acknowledged a great talking point over other boilers which are made in sections and sooner or later burn out and leak at the joints.

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Weir Stove Company, Taunton, Mass.

## McCLURE'S Genuine Charcoal Iron Redipped Roofing Tin.

McCLURE & CO.,  
Manufacturers of Tin Plate,

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# The Metal Worker

A WEEKLY JOURNAL OF THE  
**ROOFING, CORNICE, TIN, PLUMBING AND HEATING TRADES.**

With which is Incorporated The Stove and Tin Trade Journal, the Sheet Metal Builder, and Metal.

LVIII.  
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NEW YORK AND CHICAGO, SEPTEMBER 6, 1902.

ONE DOLLAR A YEAR.  
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With Hill's Solid Dies  $\frac{1}{8}$  to 3 inches.  
 Especially adapted for Threading Wrought-Iron  
 Pipes in Cramped Positions, as in Trenches, or in  
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OUR  
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 OF  
 ENGINEERS'  
 AND  
 STEAM  
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 TOOLS  
 WILL  
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## THE GORTON SIDE FEED BOILERS.

FOR STEAM AND HOT WATER HEATING.

SEND FOR NEW CATALOGUE AND PRICES.  
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Cornice and Roofing Copper,  
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**A MILLION POUNDS**  
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**AMERICAN STEAM and ALTITUDE GAUGES, POP SAFETY VALVES.**  
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Or did they make it warm for you? Were you kept busy with profitless trips around town to see why that blankety-blank furnace didn't work? Or did you sell Paragons to your customers and hear nothing from them except words of praise for the Paragon and for you? If you sold them Paragons, you will not have to go to them, but they will come to you to buy your other wares, which they will believe are as good as the Paragon Furnace.

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POLLO BEST BLOOM  
 GALVANIZED IRON

Whatever advantage be-  
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osts not a cent, and  
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 iety.

ican Sheet Steel Company, New York

## Steam Specialties.

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 TOR VALVES,  
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 AND WATER  
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 TEMPERATURE  
 No. 1 DAMPER  
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 W. 13th St., - NEW YORK.

## What makes the STEWART RANGE

so popular among the dealers?  
 Because it is a lively seller and brings good  
 profit; it stays sold and nobody kicks at it  
 except the coal man.

**FULLER & WARREN CO.,** Troy, N. Y.

This Ad. changes every week.

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Silver, Nickel Platers and  
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**MATERIAL FOR DRYING PURPOSES.**  
 Write for prices to John Sommer's Son, 355-365 Central Ave., Newark, N. J.



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All working parts renewable without taking the valve  
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## JENKINS IMPROVED AUTOMATIC AIR VALVES.



Suitable for high or low pressure. Take  
 no more room than an ordinary air cock.  
 Endorsed by the leading steam experts as the  
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JENKINS BROS., New York, Boston, Chicago, Philadelphia.

**FOLLANSBEE BROTHERS CO.,**  
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 Galvanized and Black Sheets.  
 Sheet Copper, Conductor, Eave Trough.



When you see these Trade Marks  
 stamped on Roofing Tin, you  
 know you are getting the best.



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 RANGES & HEATERS  
**UP BEFORE THE SUN**  
**365 DAYS IN THE YEAR**  
 MAGEE FURNACE CO. BOSTON.



# ROUND OAK

## Standard of America

The  
Furnace Dealer  
who gets  
enthusiastic  
over high class  
workmanship  
would, after  
carefully  
examining  
the Round Oak  
Furnace  
pronounce it  
the finest  
example of  
high grade  
furnace building  
that ever came  
under his  
observation.

We solicit inquiries  
from the trade  
for this furnace  
of quality.

*Estate of*  
**P. D. BECKWITH**  
Dowagiac, Mich.  
*Makers of Good Goods Only*



*In winter when the snow lay deep in the valley  
he walked on snow shoes, and learned to trail and  
to trap.*

*Rogers & Wells - Chi-*

*FRANK B. SWICK*



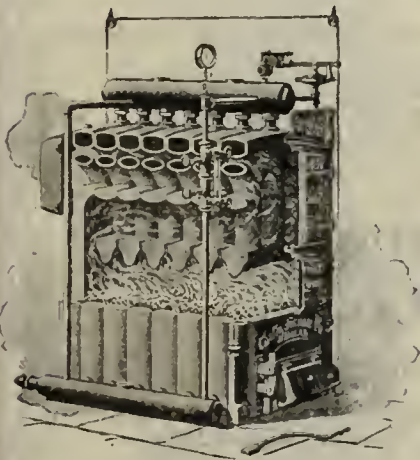
Makers of Heaters since **1847**. Think of it!

Isn't experience worth something to you? Yes, it certainly is.

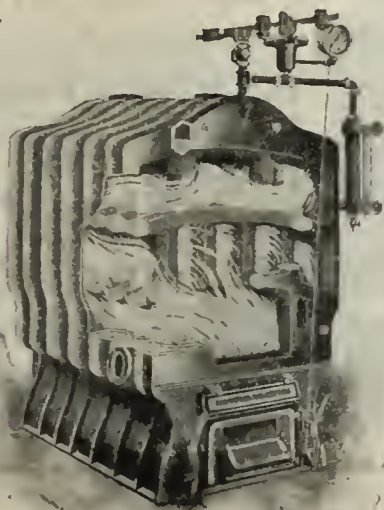
Then why not sell

# STEAM and HOT WATER HEATERS, Furnaces and Combination Heaters

That embody Superior Merits?



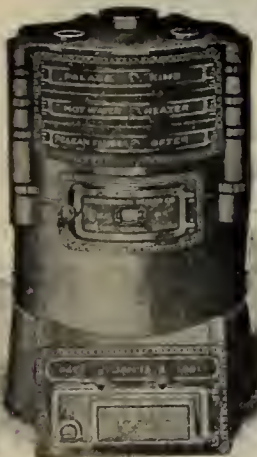
Garton "A" Boiler



"L" Series Boiler



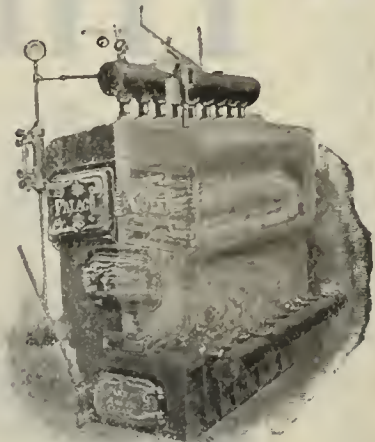
Palace Regent Boiler



Palace King Boiler



"F" Series Boiler



Palace Queen Boiler

*Catalogues upon application.*

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LARGEST MAKERS OF HEATING AND LIGHTING APPARATUS IN THE WORLD,

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**NEW YORK.**

**CHICAGO.**

**DENVER.**

Northwestern Agents: Engineering, Steam & Supplies Company, Minneapolis, Minn.



"An Exponent of the Strenuous Life."

## The Cinderella Air Tight

FOR SOFT COAL, HARD COAL OR COKE.

It is the Limit of Durability in Stove Construction.

Its reputation has been made largely by its capacity for work and its ability to stand hard knocks.

ITS SHAPE AND ITS WEIGHT MAKE IT LAST; SHAPE HELPS AS MUCH AS WEIGHT, BUT FOR THE RESULTS OBTAINED BOTH WERE NECESSARY.

It is accurately fitted, this makes it a CLEAN STOVE.

Its beautiful design and elegant nickel make it a HANDSOME STOVE.

Being a circulator and double heater makes it a POWERFUL STOVE.

Perfect fitting and a smoke consuming device make it an ECONOMICAL STOVE.

Being easily controlled helps to make it a PERFECT STOVE.

We have sold thousands of them, yet our repair business on it is almost nothing.

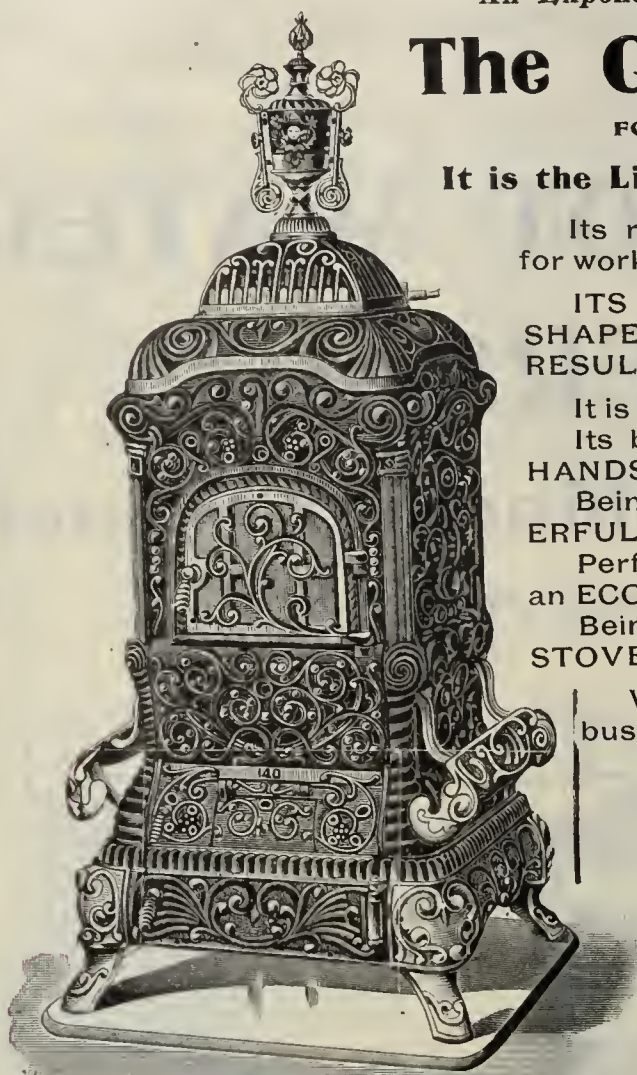
It is a Cinderella and it Never Fails.

MADE BY

**The Pittsburgh Stove and Range Co.,**

PITTSBURGH, PA.

Western Sales Agent, W. D. SAGER, 30 to 40 Michigan Street, Chicago, Ill., Chicago's Busiest Stove Jobber.



## "THE QUEEN" HOT BLASTS

ARE ENTIRELY NEW.

They have all the good features of the most popular stoves of this class. They are made only in the highest grade and of the heaviest and best materials.

### SPECIAL FEATURES.

**Ash Pit Door** with our Patented Air Tight Register, through which the grate can be operated and clinkers removed instead of fishing them out through the top door with a long poker.

**Large Ash Pit** provided with **Large Ash Pan.** Urn, Nickel Ring and Nickel Plating are first-class and give the stove a fine appearance.

They are better fitted, better finished than any other stove of its class, and the **Price is Right.**

Made in three sizes, 15, 18 and 20. Bodies of Wood's Refined Sheets.



**The Portsmouth Stove & Range Co., Portsmouth, Ohio.**

MORLEY BROTHERS, Wholesale Agents for Michigan, Saginaw, Mich.

**The Busiest Stove and Range Makers on Earth.**





# Moore's Stoves



## This Sign Draws Trade

You will see it in front  
of the stores of prominent mer-  
chants wherever you go.

JOLIET STOVE WORKS,  
JOLIET, ILLINOIS.



# The Dangler Oil Heater, 1902

Height, 27 in.  
Weight, 10 lbs.  
None better,  
Made of polished  
Steel, with either  
Brass or Tin  
Tank.



Ornamental,  
Durable,  
Powerful and  
Simple in  
Operation.  
For sale by  
Jobbers and  
Dealers everywhere.

THE DANGLER STOVE & MFG. CO., CLEVELAND, OHIO, U. S. A.



## 1903 Reliable Oil Heaters

RELIABLE Oil Heaters have always been conceded Leaders. This season they are finer than ever. TO THE RELIABLE IS DUE THE CREDIT OF THE PERFECTION AND POPULARITY OF THE OIL HEATER TO-DAY. Our Gas Heater line is the largest and most complete. Write for catalogue and prices.

MADE BY

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CLEVELAND CHICAGO SAN FRANCISCO

SOLD EVERYWHERE



# MONARCH

## RADIATOR

No 44

Entirely new patterns for 1902. Elegant, Efficient, Excellent. Polished Nickel or Aluminum finish top, feet and jewel frames, set with cut faced jewels through which the gaslight makes a brilliant effect. Heat chamber below top with pipe collar for flue connection. Each tube equipped with two three-foot Scotch tip illuminating burners, producing an intense heat. Tubes Russia iron, the whole effect very striking.

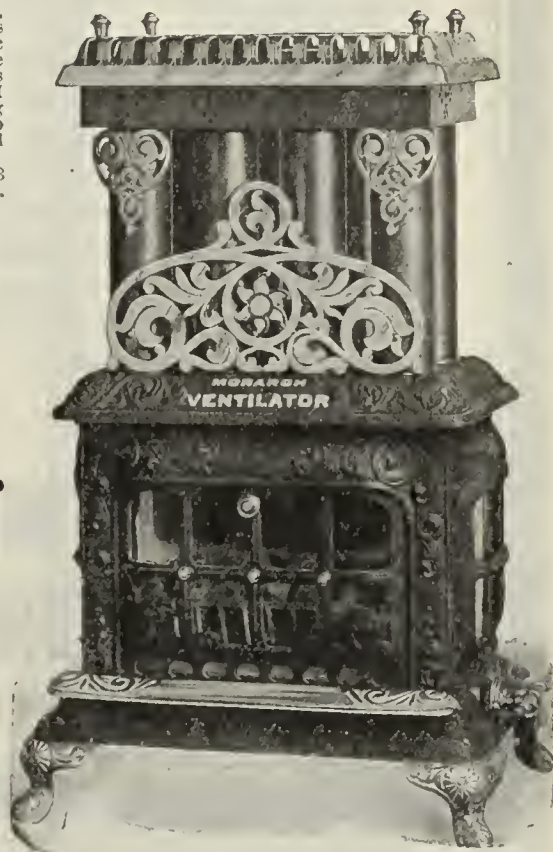
### A CALORIFIC WONDER.

Improved for 1902 by the substitution of CAST IRON fire-box section in place of sheet steel, the intense heat generated making this necessary. Two 15-inch burners, with four rows of gas orifices in each, produce a terrific fire which quickly sets the incandescent brick chinkers to glowing and MONARCH Ventilating and Radiating System of pipes combine to make this the equal of a Hard Coal Base Burner.

DIMENSIONS. — Height 33 inches. Width, 20 inches. Depth, 13 inches.

## VENTILATOR

No. 164



The  
Monarch Stove & Mfg. Co.

MANSFIELD, OHIO.

### AGENTS:

H. R. BRUCE & CO., 228 Main St., Cincinnati, O.  
A. L. CANFIELD, 284-6 Pearl St., New York.  
R. E. EDMONDS, 203 Wood St., Pittsburg, Pa.  
W. H. GRUENHAGEN, St. Anthony Park, Minn.

## CITY BUCKEYE RANGE.

For Hard, Soft Coal,  
Wood or Coke.

MADE IN 17 AND 19 INCH OVEN.

Square Top and Bracket Reservoir  
Fitted with Water Heater.

AN ATTRACTIVE PIECE  
OF GOODS AND ...

### A Ready Seller.

Write for Descriptive Catalogue  
and Prices.

## OHIO STOVE CO.

Portsmouth, Ohio.





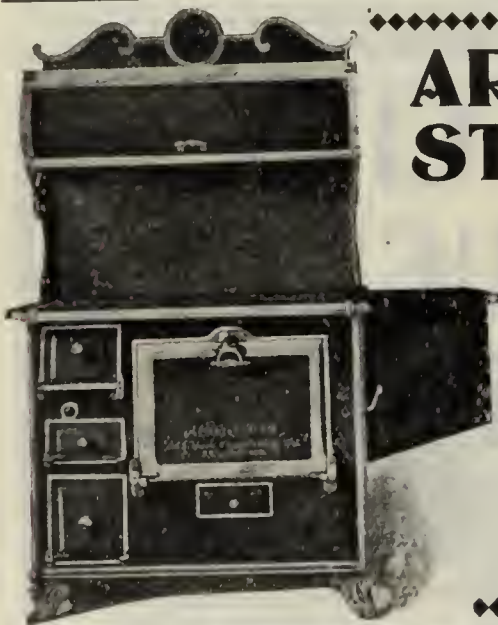
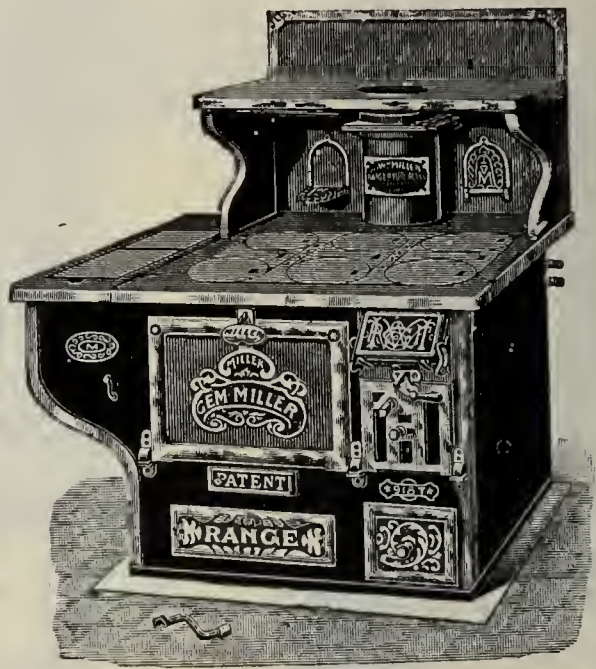
# MILLER

## STEEL PLATE RANGE

WITH Improved Removable Duplex Grate, Improved Water Back for heating water, Flue lined with Pure Asbestos Board, New Non-Warping Oven Bottoms, Cold-Handled Gravity Latch, Drop Oven and Feed Door, Patent Double Centers, Regulating Damper, Nickel-Plated Towel Rod. All bright parts Nickered instead of Polished. Nickel Bands on doors are ventilated to prevent tarnishing, and body of Ranges are highly finished.

WRITE FOR CATALOGUE AND PRICES.

**The WM. MILLER  
RANGE AND FURNACE CO.,  
CINCINNATI, O.**



## ARTISTIC ENAMELED STEEL RANGES

*The only Enameled Ranges on the market to-day.* Are not to be confused with the Black Japan and so-called baked enameled ranges which will burn off and rust. Our Enamel being fused with the iron is guaranteed rust and fire proof.

*The Highest Grade of materials* only are used in the construction of our ranges and our Enameling Process is the only successful one.

An ornament to the kitchen and a delight to the housekeeper because so easily kept BRIGHT and CLEAN by use of soap and water, doing away with the objectionable stove polish.

An attractive line and ready sellers. Send now for Illustrated Catalogue.]

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We do enameling of specialties and our line of Enameled Steel Signs cannot be excelled.



## Emperor Furnaces FOR WOOD.

**Simple, Safe, Durable.**

**Economical in Fuel.**

The Best and Cheapest Line of Wood Furnaces. . . .  
Furnished for either Brick or Galvanized Iron Casing

SEND FOR CATALOGUE.

*Bergstrom Bros & Co*

NEENAH, WIS.



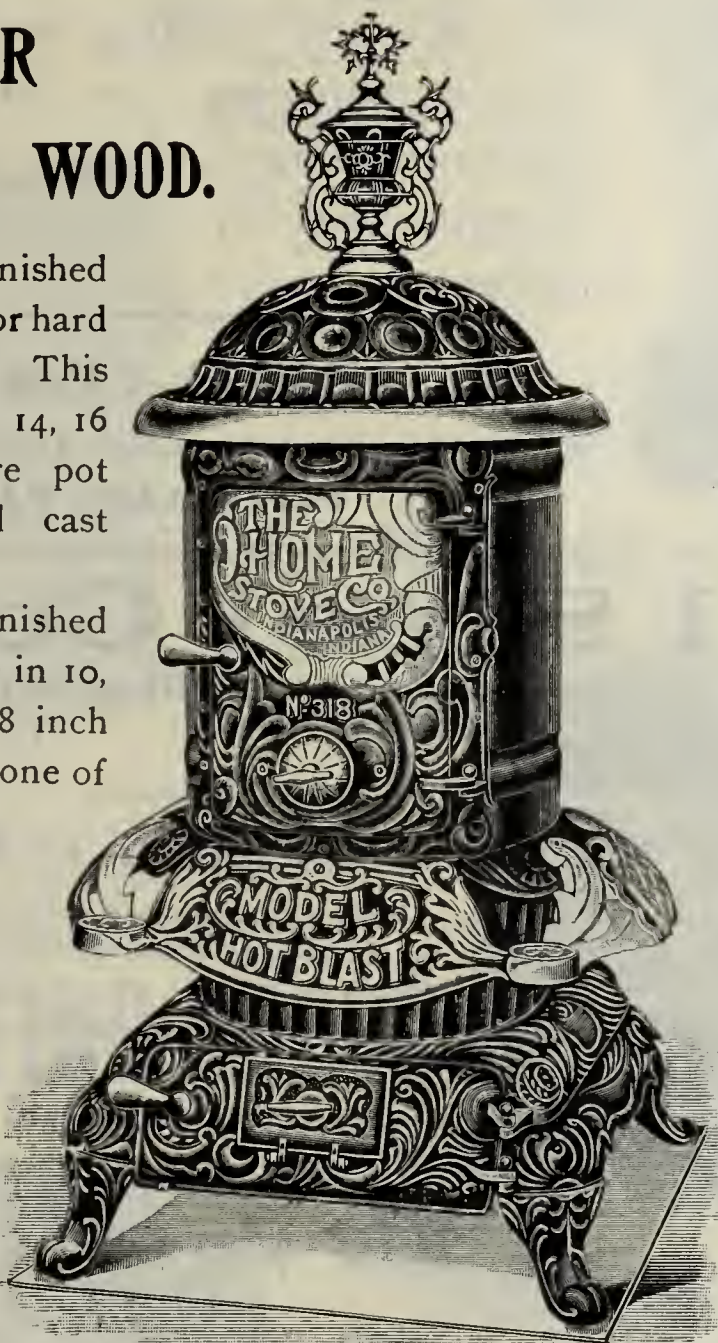
# MODEL HOT BLAST

FOR  
COAL or WOOD.

It can be furnished with magazine for hard coal and coke. This stove is made in 14, 16 and 18 inch fire pot with steel and cast body.

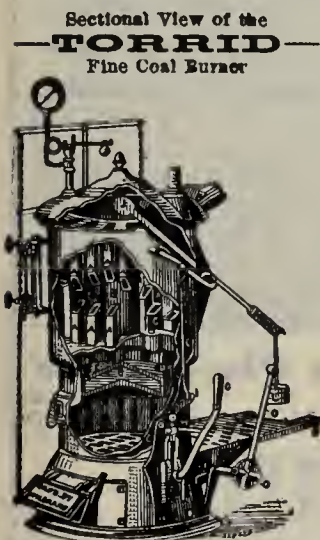
It can be furnished as an Oak Stove in 10, 12, 14, 16 and 18 inch Fire Pot. It is one of the most complete Oak Stoves on the market to-day. Has the latest improvements, highly nickel plated and perfectly air tight.

Write for Prices  
and Catalogue.



## HOME STOVE CO.,

MFRS. CELEBRATED MODEL STOVES AND RANGES,  
INDIANAPOLIS, IND.



For Steam or Hot Water Heating.

This boiler is made on an entirely new principle and is

### *The Only Boiler*

that will burn Pea or Buckwheat Coal successfully.

SAVES TIME. SAVES MONEY.  
RESULTS UNEQUALED.

MADE BY

## W. H. DRAKE, 36 Clinton St., NEWARK, N.J.

MANUFACTURER OF

The TORRID Steam and Hot Water Boilers  
for burning either anthracite or bituminous coal.

Factory, Hackettstown, N. J.

Send for catalogue.




HEATING BY COMBINATION STOVES  
AND FURNACES.

Suitable for Large or Small  
Houses, Stores, Conserva-  
tories, Barber Shops, Ho-  
tels, etc., etc.

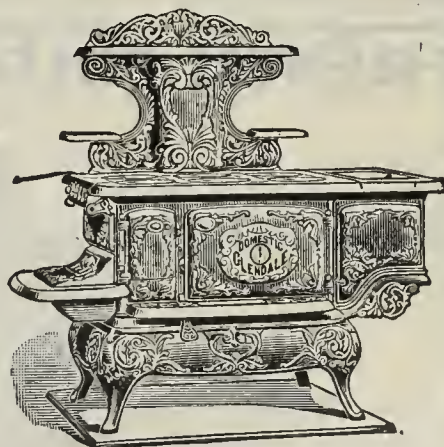
Heat Water Quickly.  
Circulation is Positive.  
No Joints Inside to Leak.

### THE NATIONAL PIPE BENDING CO

160 RIVER ST., NEW HAVEN, CONN.

## GLENDALE

Stoves and  
Ranges



Manufactured by  
**SOMERSET STOVE FOUNDRY CO.,**  
SOMERSET, MASS.

Send for a Sample.

— HEWITT: "What are you raising  
whiskers for?"

Jewett: "Well, I don't mind telling you  
that I am wearing a necktie my wife gave  
me."—Harper's Bazar.





## Natural Gas is Cheaper Than Coal,

Providing You Use the Proper Appliances.

We are sending out Catalogue No. 36, showing over one hundred different designs of Gas Stoves and Ranges that are economical and efficient.

**H. ADLER COMPANY,**

Manufacturers of Acme Gas Stoves and Ranges,  
**PITTSBURG, PA.**

## Noxall Steel Cook

With or Without Reser-  
voir.

For Wood or Coal.

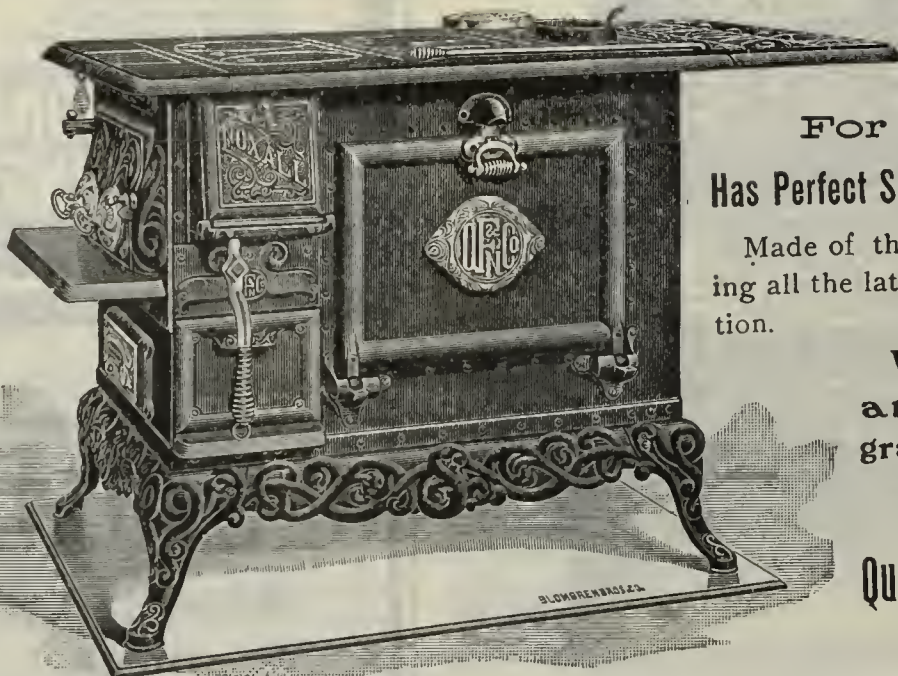
Has Perfect Square Oven, with Aluminum Finish.

Made of the very best material and contain-  
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tion.

We also manufacture a full  
and complete line of high  
grade Air-Tight Heaters.

ASK FOR CATALOGUE.

**Quincy Foundry and Novelty Co.,**  
QUINCY, ILL.

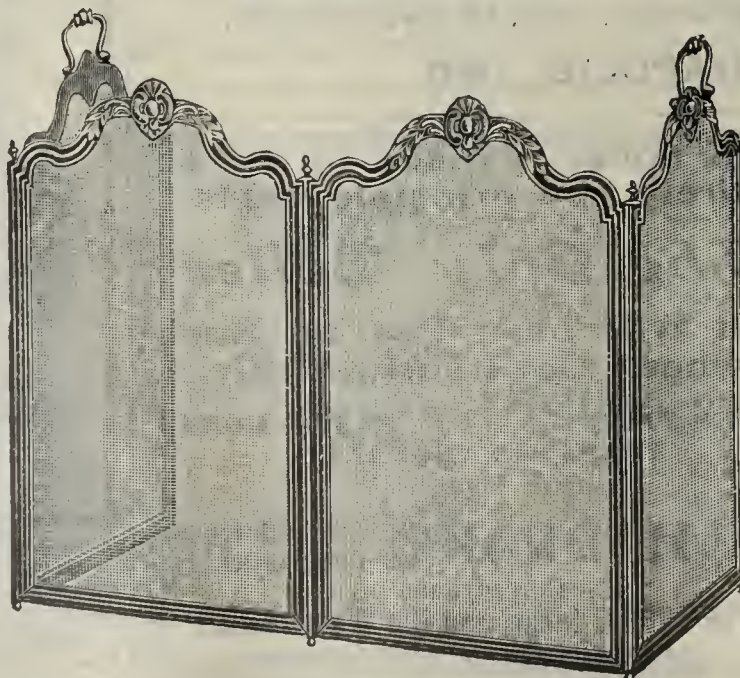


## FRENCH FOLDING SCREENS FOR FIRE PLACES

We are the only manu-  
facturers of this line in the  
United States.

*Send for Our Prices  
Before Importing.*

Our screens are heavier,  
smoother finished, and gen-  
erally better than the im-  
ported article.



Finished in pure brass, gilt,  
lacquer and Berlin black.

Screens made in the follow-  
ing heights: 18, 20, 26 and 30  
inches.

A large variety of styles.

Send for catalogue of  
**Fire Place Goods**  
made of brass, wrought iron  
and cast iron.

**The S. M. HOWES CO.,** Manufacturers, 42-44-46 Union Street, **BOSTON, MASS.**

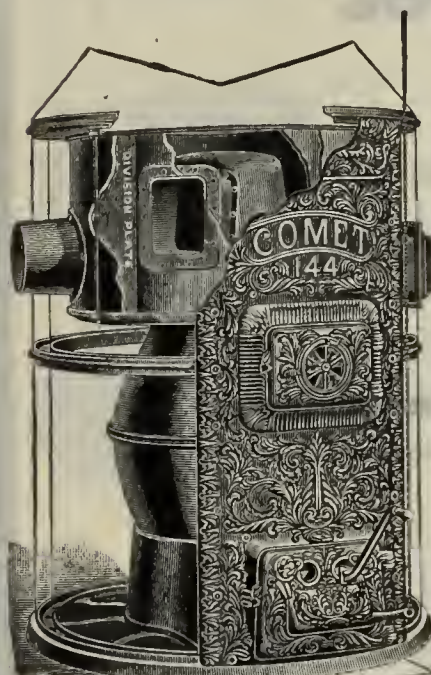


# THE STAMFORD FOUNDRY COMPANY

THE OLDEST STOVE FOUNDRY IN AMERICA SINCE 1830 MAKERS OF CELEBRATED  
FURNACES, RANGES AND STOVES

THOUSANDS IN USE 1000 IN A SINGLE CITY  
RECORD EVERYWHERE ESTABLISHED

*References to Some of Our Furnaces, Now and Through  
Past 25 Years in Continuous Service*



COMET Heavy Steel Drum

Both furnaces are well made—all exposed parts heavy. *A generation of constant service establishes their record for durability, economy, powerful heating, easy to set, simple to operate.*

The radiator of the STAMFORD ALL CAST FURNACE is a combined dome-tubular and cylinder construction of immense capacity and heating power.

The COMET radiator is made of heavy cold rolled steel. Fire pot and exposed parts especially heavy and durable.

The COMET is made for satisfactory service and not for PRESENT cheapness, ENDING IN EARLY DESTRUCTION.

OUR GUARANTEE follows everything we make, whether stoves, ranges or furnaces, and is established by our over 70 years' record.

Also an elegant and new line of OAK STOVES

Send for Catalogue, Capacities and Prices



STAMFORD COMBINATION HEATER

HOT AIR AND HOT WATER OR HOT AIR ONLY, AS ORDERED  
The above cut shows interior form of water section, giving an idea of its great heating surface and consequent power.

THE STAMFORD FOUNDRY COMPANY  
STAMFORD, CONN.

## A LASTING SUCCESS REQUIRES MERIT!



Practical men cannot be fooled by extravagant claims regarding any furnace. No heating apparatus can do the impossible or overcome the laws of nature.

**Too much** is claimed for some furnaces, and boastful claims often prove to be a **boomerang**. We claim to make furnaces that are **all right**; that **do the work**; that **wear well**; that **are not extravagant coal consumers**; and that **make friends for us**. Our customers will **back us** in these claims.

Send for catalogue and prices.

## THE GRAFF FURNACE CO.,

Manufacturers,

208 Water Street, New York.



**THE H.B. SMITH CO.,**  
**WESTFIELD, MASS., U.S.A.**

Catalogue furnished only upon application to  
**Heating Contractors, Engineers and Architects**

92 Pages. Size 9 x 12 Inches.

**COTTAGE  
 BOILERS.**

STEAM BOILERS (8 SIZES), 550 SQ. FT. RADIATION SUPPLIED.

WATER BOILERS (8 SIZES), 900 SQ. FT. RADIATION SUPPLIED.

PACIFIC COAST AGENTS

**HOLBROOK, MERRILL & STETSON,**

SAN FRANCISCO, CAL.

EUROPEAN AGENTS

**AUG. EGGERS,**

BREMEN AND NEW YORK CITY.

SALESROOMS :

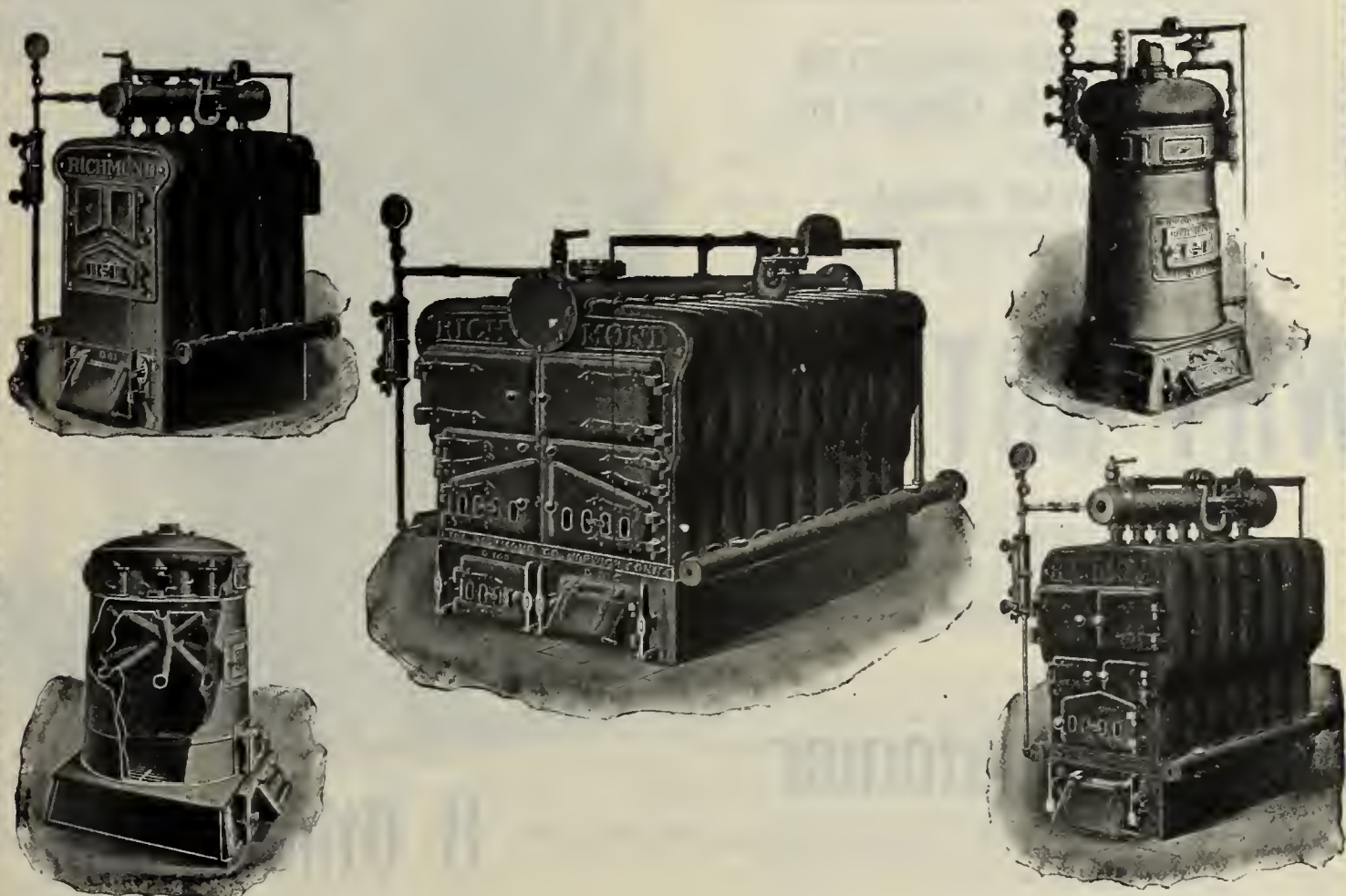
**THE H.B. SMITH CO.,**

**133 CENTRE STREET,  
 NEW YORK.**

**510 ARCH STREET,  
 PHILADELPHIA.**



**T**HE season is now approaching when you will be *too busy* to consider the fine points of distinction between one boiler and another.



Why should you postpone another day informing yourself fully about the good points of . . . .

# RICHMOND BOILERS

SEND FOR OUR NEW **1902** CATALOGUE. DON'T FORGET  
TO ASK FOR PRICES ALSO.

**THE RICHMOND COMPANY,** NORWICH,  
CONN.

|                    |                   |                    |                             |                        |
|--------------------|-------------------|--------------------|-----------------------------|------------------------|
| NEW YORK,          | PHILADELPHIA,     | PITTSBURGH,        | CHICAGO,                    | ST. LOUIS,             |
| 738 Park Row Bldg. | 18-24 So. 7th St. | 210 Ferguson Bldg. | Chicago Heater & Supply Co. | Rumsey & Sikemeler Co. |



# ARE YOU NOT TIRED

of selling furnaces year after year, without any profit either in money or reputation? For years back you have tried to get the lowest priced furnace in order to undersell your competitor, and in getting the lowest price have you not got all that goes with it?—

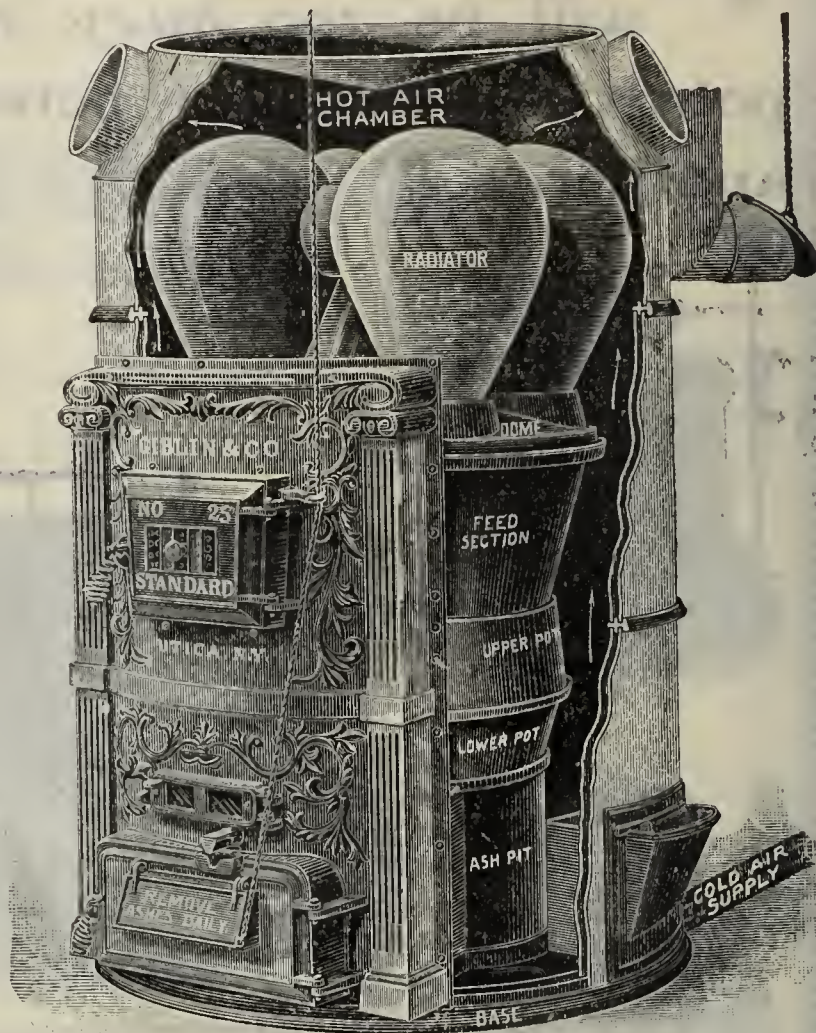
INFERIOR CONSTRUCTION,  
WASTEFUL CONSUMPTION  
OF FUEL,  
CONSTANT REPAIRS,  
UNSATISFACTORY RESULTS.

## WHY NOT

handle a furnace that is sold at a reasonable price and yet has unquestioned merit, efficiency and durability in operation, and economy of fuel? With such a furnace you can ask a reasonable profit over cost, and

## Give Your Customer

certain satisfaction, lessen his coal bills, lessen the labor expended and make him a walking and a talking advertisement for your furnace business.



## - - - If Others Can

do this, so can you, and the fact that hundreds of our agents are doing this and

## Get Good Prices

for our furnaces in spite of the temptations offered them of lower priced furnaces, is sufficient proof that

## You Can If You Try.

do it also

To do this you must know what

## Our Furnaces

are, and where they excel others. This is fully explained in our catalog, copy of which can be had for the asking.

**GIBLIN & CO.,**  
UTICA, N. Y.





Zenith Flue Box Base Radiator.

## OUR ZENITH PATTERNS OF RADIATORS

are used in Park Row Building, New York; Stock Exchange, Hotel Touraine, Hotel Marie Antoinette, Bank of New York, St. James Building, Barnard College New Buildings, D. O. Mills' Hotels Nos. 1 and 2, W. W. Astor Apartment Building, all of New York City; Forts Hancock and Wadsworth; P. O. Building, Washington, D. C.; Union Station, Pittsburgh; Broad Street Station and Arcade Building, at Philadelphia etc., etc., etc. These Radiators may therefore be said to have secured the endorsement of a large number of the most prominent heating engineers in the United States.

Send for New 1902 Catalog.

**AMERICAN RADIATOR COMPANY**

Lake and Dearborn Streets, CHICAGO.

New York, Boston, Philadelphia, Buffalo, St. Louis, Minneapolis, Denver.

## THE CROWN "LOW DOWN" FURNACE

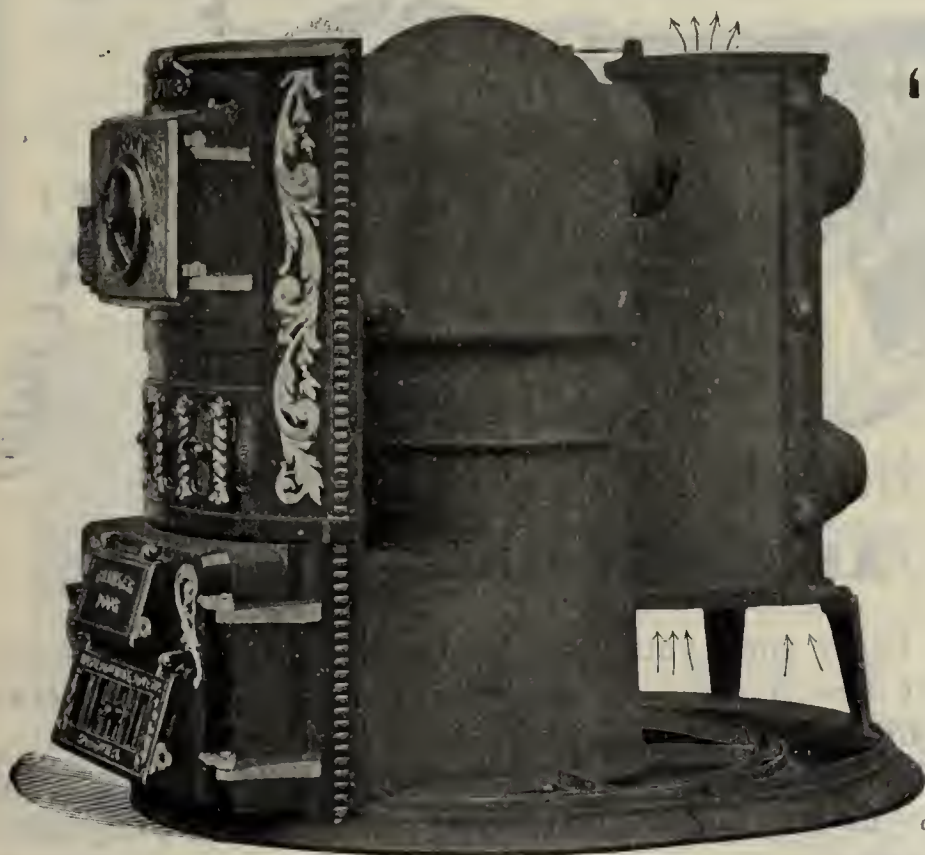
Competes with Steam and Hot Water Heating.

- 1st—In heating at long distance.
- 2nd—In an economical consumption of fuel.

OUR CROWN LOW DOWN FURNACE IS  
**SUPERIOR TO STEAM AND HOT WATER.**

- 1st—In its simplicity of management, any ordinary help can manage this furnace.
- 2d—In its economy of repairs, repairs being only needed at long intervals, the skilled mechanic not required to repair this furnace.
- 3d—*Most important of all* is the purity of air supplied. It's the ideal sanitary house heating construction. Any one caring for the good health and comfort of the home should not fail to examine this furnace before installing any other system of heating.

**March-Brownback Stove Co.**  
POTTSTOWN, PA.

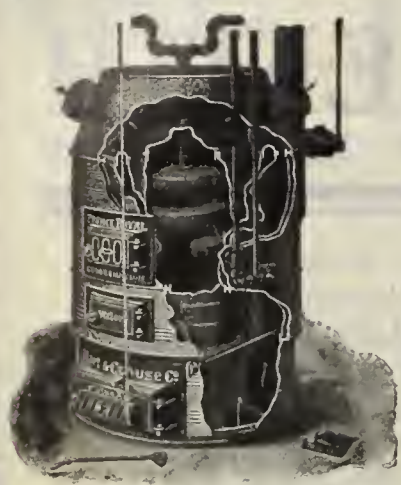


# BRAND STOVE CO.

**STOVES, RANGES and  
FURNACES.**

SEND FOR CATALOG.  
MILWAUKEE, WIS.





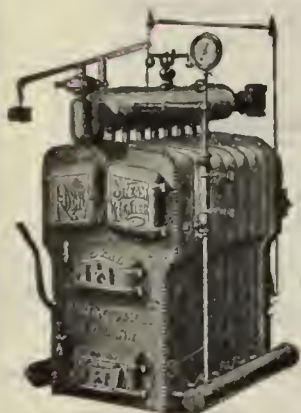
# Royal Heaters.

**HART & CROUSE CO.,**

235 Water St., 78 Lafayette St., 79 Lake St.,  
New York. UTICA, N. Y. Chicago.

The Leading Line of Heating Apparatus.

**HOT WATER,  
STEAM,  
HOT AIR.**



**B  
E  
N  
G  
A  
L**



**F  
U  
R  
N  
A  
C  
E  
S**

**Are TIGERS for heating.**

Every time you think of furnaces to hold trade and get new customers we want you to write **BENGAL FURNACES** big on your mind.

We want you to do this because it is as good a thing for us to have the **BENGAL** handled by progressive furnace men as it is for progressive furnace men to handle the **BENGAL**.

*Send for particulars.*



Eastern Selling Agents:

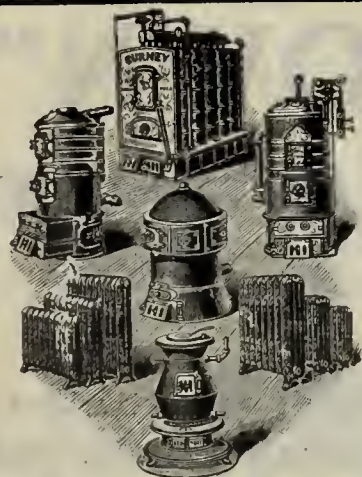
**GURNEY & CO.,**

Washington, Hanover and Elm Streets, Boston, Mass.

**FLOYD, WELLS & CO., Royersford, Pa.**

NEW YORK OFFICE, 210 WATER ST., R. W. HILLMAN, Manager.





## Shortest Route.

A straight line is the shortest distance between two points.

## GURNEY HEATERS,

"400 Series," "Doric" and "Bright Idea,"

are the shortest route between you and the most trade. Therefore you ought to adopt them. Business at best is difficult enough, hence anything that eases it deserves recognition. "Gurney" Heaters produce positive heating results and so secure the attention of buyers. They save fuel. They are very conservatively rated. They are easy to operate and they last longer than others. "Gurney"

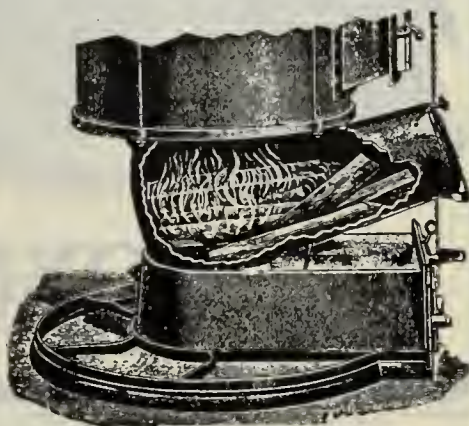
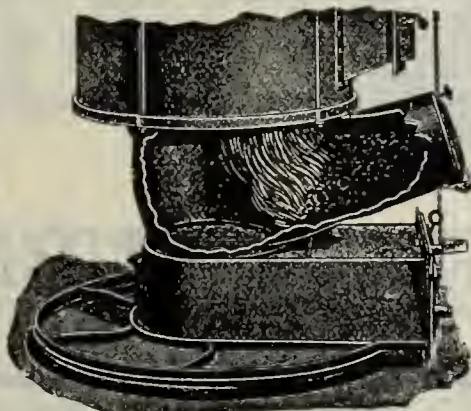
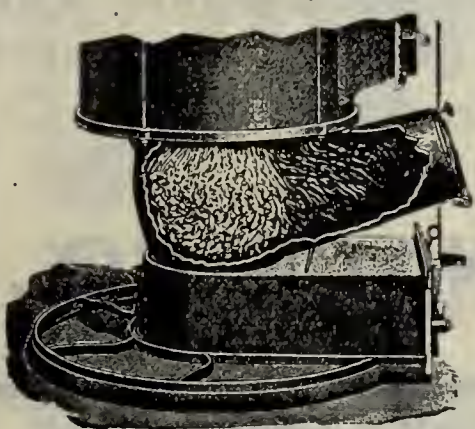
Heaters will produce more business from the same effort than any other heater. You must be interested in that kind. Show your interest by writing for particulars.

## GURNEY HEATER MFG. CO.,

Branch, 111 Fifth Ave., NEW YORK CITY.

74 Franklin St., BOSTON.

Western Selling Agents, JAMES B. CLOW & SONS, 358 Franklin St., Chicago, Ills.



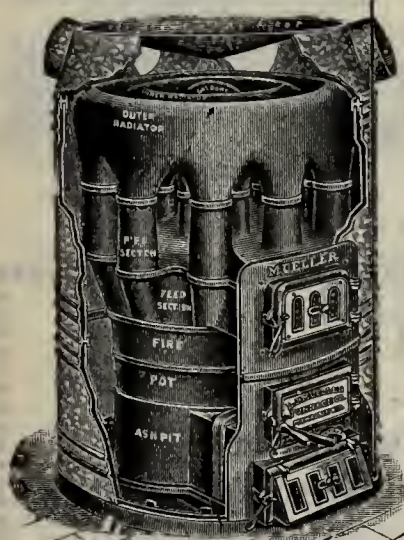
## THREE PRACTICAL USES

to which the *Combination* Fire Bowl and *Coking Magazine* used on the **PATRIC FURNACE** may be put.

The first cut shows soft coal undergoing coking process in magazine, with coked coal in main bowl. A *great fuel saver*. Second cut illustrates fire carried only in magazine, for light Spring and Fall heating, a *great convenience*. Third illustration shows furnace used for wood. A *success for twenty years*.

SEND FOR NEW ILLUSTRATED CATALOGUE.

**THE PATRIC FURNACE CO., = Springfield, Ohio.**

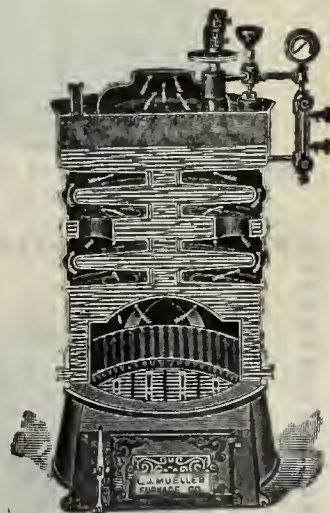


**GOOD GOODS  
RIGHT PRICES  
PROMPT SHIPMENT  
COURTEOUS TREATMENT**

CONTRIBUTE TO THE SUCCESS OF

# MUELLER

**Furnaces and Boilers.**



**We Make Heaters in All Styles For All Kinds of Fuel.**

Write for Catalogue and Prices.

**EVERYTHING IN THE HEATING LINE.**

ESTABLISHED 1857.

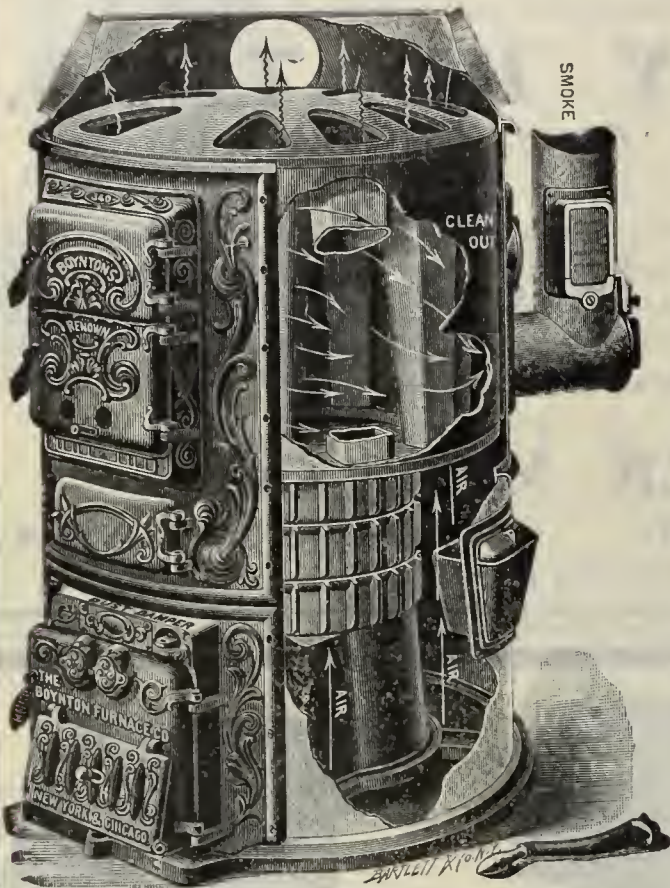
## L. J. MUELLER FURNACE CO.,

190 REED STREET,

MILWAUKEE, WIS.



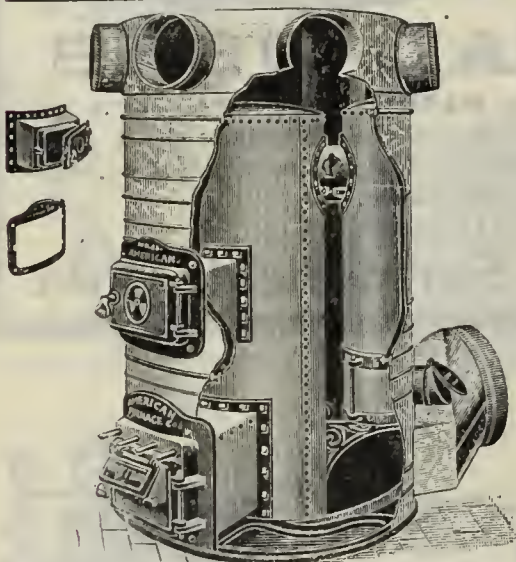
# BOYNTON'S "RENOWN" PORTABLE FURNACE



A NEW and distinct type of construction thoroughly tried and tested. Possessing more area of heating surface to area of grate surface than any other furnace manufactured.

Notice construction of cast iron heating flues, each one directly over and in contact with fire. Can we mail you catalogue and prices?

*The* **BOYNTON FURNACE CO.,**  
NEW YORK. CHICAGO.



Burn Hard or Soft Coal, or Coke. Large Doors.

Write for prices and secure the agency before the other fellow gets it.

## SOME RIPE EXPERIENCE

has come to us through watching the doings of dealers throughout the United States.

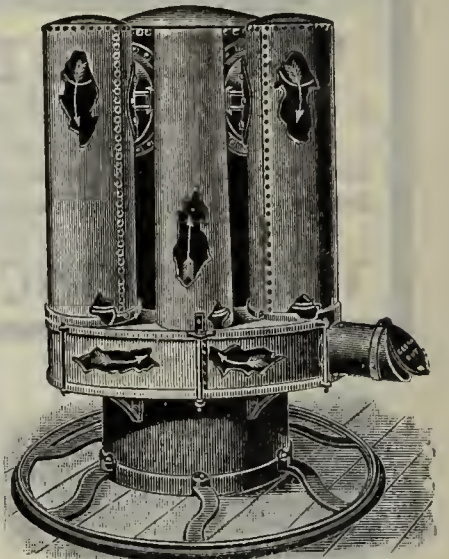
We find that the dealer who sells cheap furnaces not only loses ground in the furnace business, but also has a falling off in his other lines.

On the other hand, we can say that the man who sells a good furnace and charges enough to do a good job will, in a few years, be the leading furnace man in his town and at the same time build up his other business.

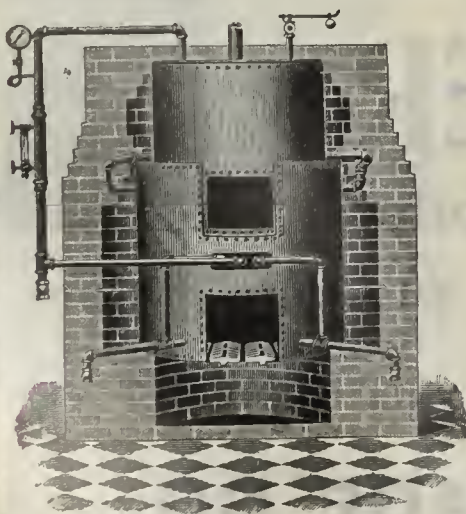
The *American Furnace* is made for the better class of trade; is durable, clean and economical in fuel.

**The American Furnace Co.**

1911-13 PINE STREET, ST. LOUIS, MO.



Large Radiators, easy to clean out.



**THE  
HAXTON**

A Steel Brick-Set Boiler for Steam and Water Heating—Hard or Soft Coal.

HAS AN ESTABLISHED REPUTATION.

SOLD ON MERIT.

PRICES TO THE TRADE ONLY.

**KEWANEE BOILER COMPANY**

Chicago Store, 169 E. Lake St.

KEWANEE, ILL.

Eastern Representatives:

MODEL HEATING CO.,  
Philadelphia, Pa.  
New York, N. Y.  
Buffalo, N. Y.  
Boston, Mass.





**Made in Chicago  
Sold Everywhere**

Don't write us unless you want the agency for the latest and best Steel Range made. It is the best and different. Filling orders from dealers who know a good thing is keeping us busy, but we want more. Send for catalog.

**GEORGE M. CLARK & COMPANY**

73 LAKE STREET, CHICAGO.





# Mr. Furnaceman, Why Not

SECURE THE AGENCY FOR THE

## Auer Side Wall Register?



It has more talking points  
More artistic and practical  
You will like it better  
Your customers will like it better

THAN  
ANY  
OTHER.

Your furnace will work better  
You can install furnace cheaper  
Your profits will be greater  
Your business advertised more

THAN  
WITH  
ANY  
OTHER.

We believe you would want the agency if you knew more about it. It would give us pleasure to tell you all about this register if you will drop us a card. Address

**The Auer Register Co.,** Main Office and Factory, Toledo, O., U. S. A.  
123 Franklin St., Chicago, Ill.



IF YOU ARE NOT SELLING THE

### Peck-Williamson Underfeed Furnace

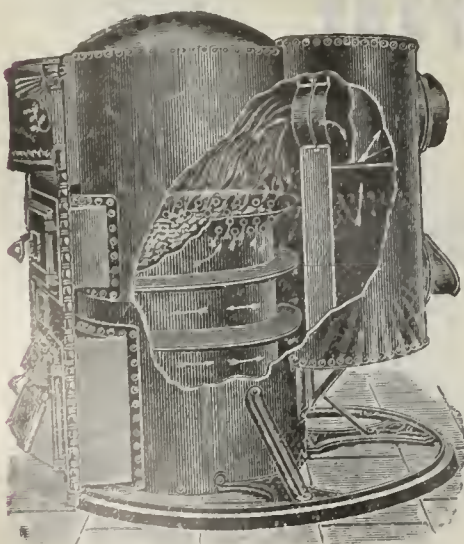
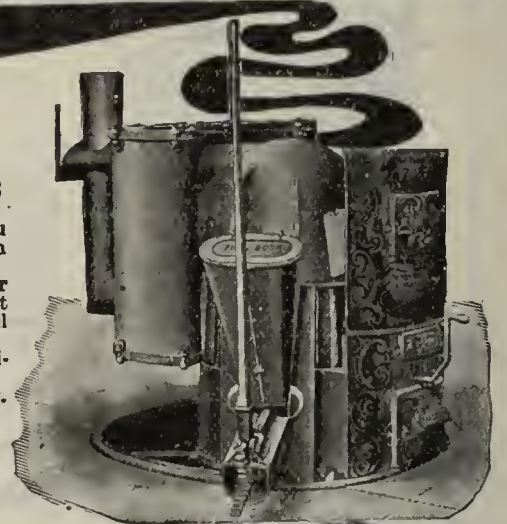
you have not the trade and are not making the money you might. Just a pull or two of the lever feeds the new coal from underneath.

The Underfeed Furnace consumes less fuel than any other furnace ever built. The coal is burnt more slowly. All the heat units from it, as well as from the smoke, are utilized and all smoke eliminated.

Our handsome booklet explains its splendid heating qualities and coal saving.

You may have this booklet and our special plans for selling. Ask for booklet about our Laundry Dryer also.

**THE PECK-WILLIAMSON COMPANY,**  
CINCINNATI, OHIO.



### WEIR ALL STEEL GAS AND SOOT CONSUMING FURNACE.

THE HEAVIEST STEEL FURNACE MADE.

Absolutely gas and dust tight. A great heat-producer but a fuel saver.

MANUFACTURED BY

**THE MEYER FURNACE CO.,**

1300-1304 S. Washington St.,

SEND FOR CATALOGUE.

PEORIA, ILLS.

### "The Handy Furnace Pipe."

MADE WITH A VIEW OF BEING SAFE.

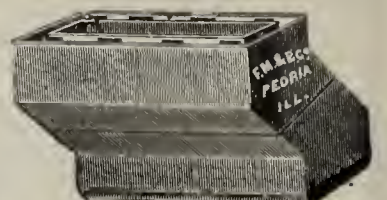
The saving of labor in putting it up really makes it the cheapest hot air pipe on the market.

MANUFACTURED BY

**F. MEYER & BRO. CO.,**

SEND FOR CATALOGUE.

PEORIA, ILLS.





# The New WALKER BOILER

for Steam: for Water

Our boilers for either Steam or Water Heating will extract more heat from a shovelful of coal and keep the radiation warmer and at a more even temperature than any other boiler. Why? Because every part of its highly effective heating surface in the fire box, or over the fire, is exposed to direct heat. Boilers are fitted with all best and latest improvements, easy to clean flues and to operate. We want you to become acquainted with our productions. It will pay you. Burn any kind of fuel.

**SOLD ON THE HONEST RATING PLAN.**

Catalogue on application.

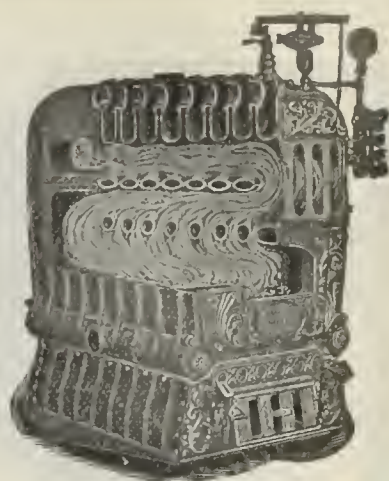
Correspondence and inspection invited

## WALKER & PRATT MFG. CO.,

31-35 UNION ST., BOSTON, MASS.

*Finest Factory in this Line in the World.*

*Prompt Deliveries.*



Made in 21 Sizes,  
For Steam or Water.

OFFICE OF  
**M. H. SULLIVAN & SON,**  
High-Glass Painting and Decorating.

FALL RIVER, MASS., January 10, 1902.

DIGHTON FURNACE CO.,  
Taunton, Mass.

*Dear Sirs:* The Dighton Furnace with Hot Water Combination attachment, which was installed in my residence a couple of years ago, is very satisfactory in every way.

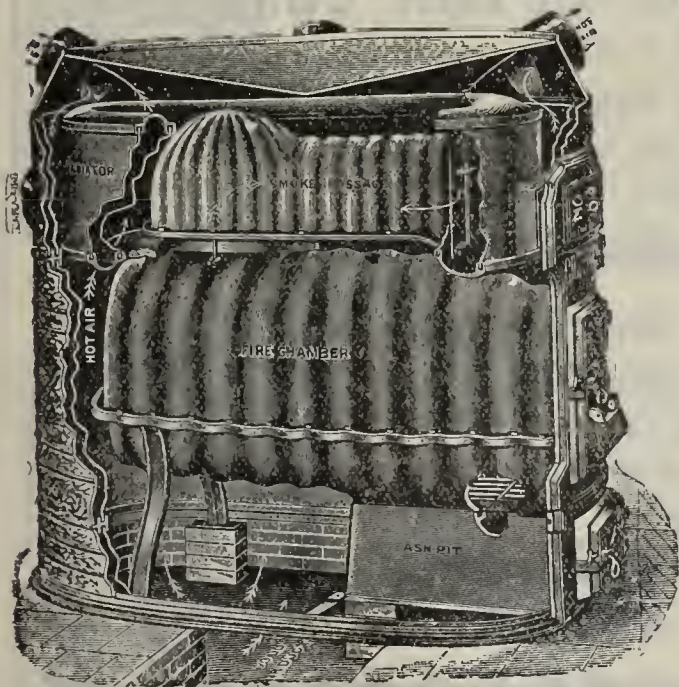
It requires very little care and uses less fuel than any furnace I have ever had any experience with.

Several of my friends now use the "DIGHTON," having bought through my recommendation, and they speak as highly of it as I do, and recommend it, especially for its economy of fuel.

Yours truly,

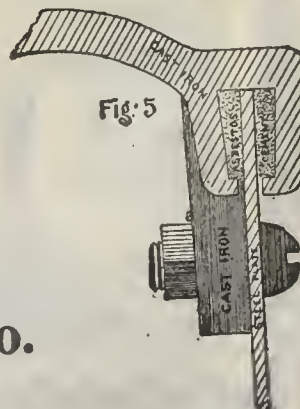
M. H. SULLIVAN.

# GILT EDGE



stands for best when applied to furnaces. The many dealers who have installed and the thousands of householders whose homes have been heated by our furnaces show they like the Gilt Edge, as will be seen by the testimonials they have written. Let us send you a few of them.

The Keystone Joint used in Gilt Edge Furnaces is the only permanent gas tight steel and cast iron joint on the market.



**R. J. Schwab & Sons Co.**  
**MILWAUKEE.**





## The "SUNRAY" is the Autocrat of Heaterdom

AS A TRADE-WINNER IT HAS POINTS OF MERIT THAT CAN BE FOUND IN NO OTHER HEATER. WRITE FOR CATALOGUE.

Agents Wanted.—Many a Steamfitter has struck the keynote of success by handling our goods. We will grant agencies to established firms if territory is uncovered.

### THE J. L. MOTT IRON WORKS

HEATING DEPT.,  
84-90 Beekman Street,  
NEW YORK, N. Y.



## WINCHESTER

For the good of the heating industry, manufacturer and steam fitter alike should strive to make and install only that which gives perfect satisfaction to users. In that way the demand is increased. As manufacturers, we think the "WINCHESTER" heater fulfills all the requirements.

SMITH & THAYER COMPANY,  
Boston, Mass.; 105 Beekman St., New York.

## HEATER.



### The Helios-Upton Co.'s

First on the Market. 150,000 Sold.



No. 420, with Projecting Lamina Cover.  
3 inches in diameter.

## STANDARD Oven Indicator

has a dial graduated in the simplest possible manner, as can be seen. This graduation was adopted because every oven has its own peculiarities, and an indicator adjusted to one oven might be incorrect for another. The *Standard* can be adjusted to any oven and has no complicated parts. Made in 3 styles.

Send for circular.

### HELIOS-UPTON COMPANY,

HENRY GLEASON, Agent, 258 Broadway, N. Y.

Peabody, Mass., U. S. A.

All Kinds of Special Instruments and Appliances Manufactured by Contract.

Cement  
Tampers.

Tools for  
Cement Work.

Jointers  
and  
Edgers.



### KRAMER BROS., Dayton, Ohio.

HARDWARE SPECIALTIES.



STOVE PIPE DAMPERS.

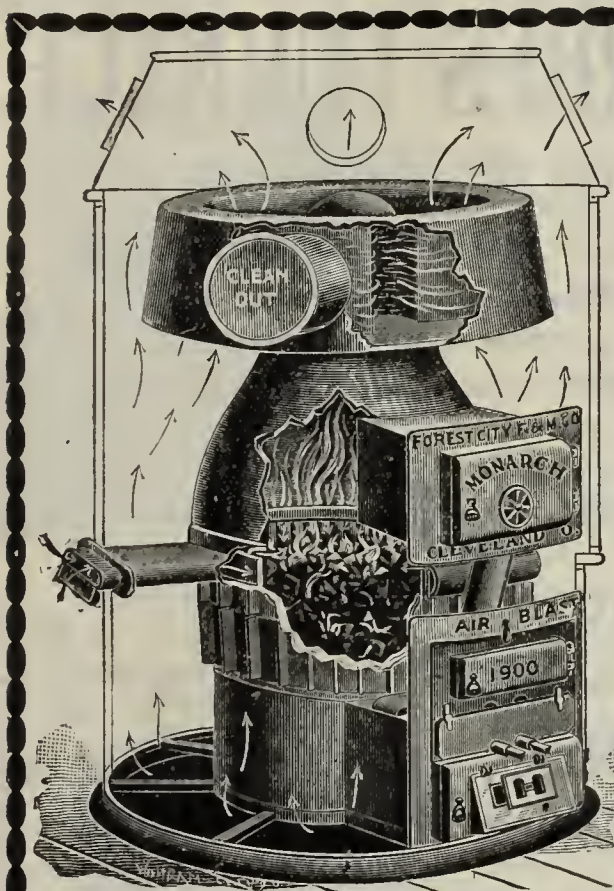
Fine Nickel Plated Handle.  
Sharp Pointed Spindle.

THE GEM  
BALL BEARING STOVE CASTERS.



Adjustable Stove  
Pipe Thimble.





## Monarch Air Blast Furnaces.

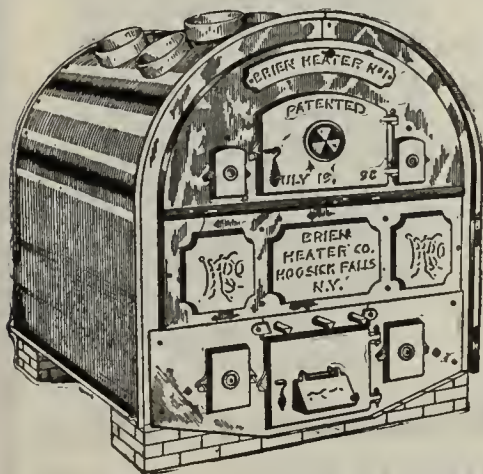
All Cast Iron.  
For Hard and Soft Coal.

Send for 1902  
Catalog and discounts.

The Forest City  
Foundry and Mfg. Co.

81 Elm Street,  
CLEVELAND, OHIO.

Gray Iron Castings to order. High  
grade only.



## Brien Heater.

A perfect, all cast WOOD or  
COAL burner. There is no  
other Hot Air Furnace as  
low down as the "BRIEN."

Write for territory, catalog and prices.

**BRIEN HEATER CO.,**  
HOOSICK FALLS, N. Y.



## Portable OVENS

FOR  
CORE BAKING,  
JAPANNING,  
ENAMELLING, Etc.

OVENS FOR Bakers, Confectioners, Hotels, Etc.

Made in all sizes, single and double, for coal, wood,  
natural or artificial gas.

SEND FOR CATALOGUE.

The G. S. BLODGETT CO., Burlington, Vt., U. S. A.



## ROBBIN HOT WATER HEATER.

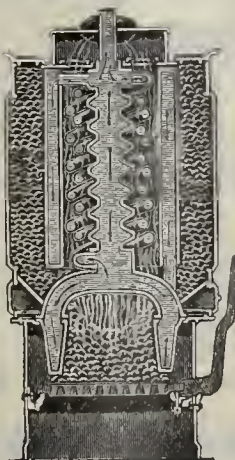
For heating dwellings and other  
buildings; also for greenhouse heating.

**SAVES FUEL,**

and is a success in every way.

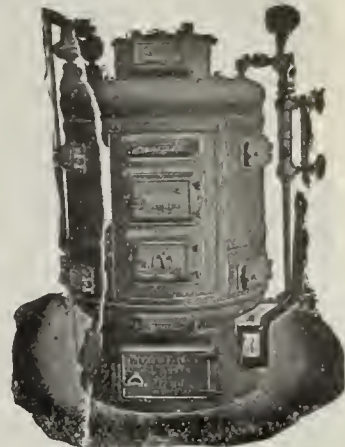
Send for catalogue.

**A. L. Swett Iron Works,**  
MEDINA, N. Y.



## Pierce BOILERS and RADIATORS

for Steam and Water Heating.



Pierce Improved Florida Steam Boiler.  
LARGE HEATING CAPACITY.  
ECONOMIC IN FUEL CONSUMPTION.

Endorsed by the foremost Architects  
and Heating Engineers.

Write for New Illustrated Catalogue.

**Pierce, Butler & Pierce Mfg. Co.,**  
Syracuse, N. Y.  
New York. Boston. Philadelphia.

## The Champion Hot Water Combination Heaters.

They Fit Any  
Furnace.

Base section when  
used without ring  
sections

Ring Section



These Heaters are made in five sizes diameter, and  
from 100 to 700 square feet radiation capacity.  
Will heat those cold rooms or an addition to the build-  
ing. Will increase the capacity of any furnace. Are  
cheaper than coils and will do more work.  
Write for new circular. Manufactured by

**FRANK D. STOLZ,**  
115 Lake St., Chicago, Ill.

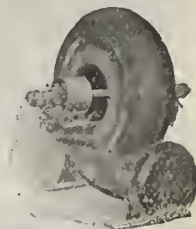
## WHERE COMPETITION LAGS

Imitators always fall short when it comes to  
the finishing touch.

### "A B C" VOLUME BLOWERS

have exclusive fit-  
ness and excellence  
which will always  
distinguish them  
from all others.

Send for  
Catalog  
No. 140G.



**AMERICAN BLOWER CO.**  
DETROIT, MICH.  
NEW YORK. CHICAGO. LONDON.



Height over all,  
4 ft. 3 inches.



## The FORBES FURNACE.

You run no risk in putting in the  
**Forbes Furnace.**

When properly installed we guarantee them in every case.

They are constructed entirely of cast iron.

No sheet iron drums.

Our radiating tubes are  $\frac{3}{8}$  in. thick, and will wear for years.

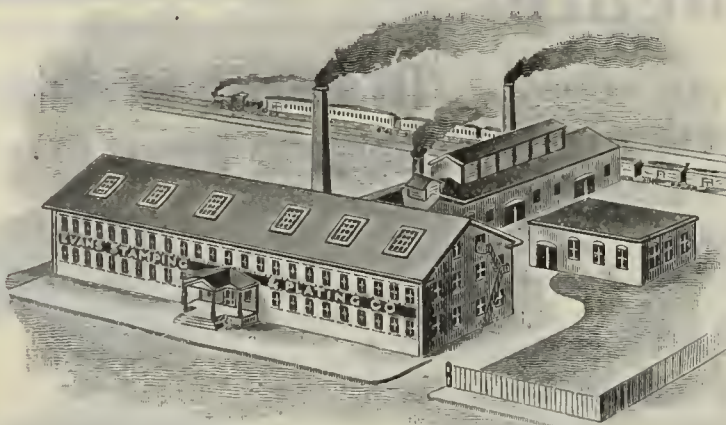
Specially suited for low cellars.

SEND FOR CATALOGUE AND FULL PARTICULARS.

**Tubular Heating & Ventilating Co.,**

228 Quarry St., Philadelphia, Pa.

This is the place where the "ACME"



OVEN THERMOMETER is manufactured.

TAUNTON, Aug., 1902.

MR. MANUFACTURER.

Dear Sir:—

Make your stoves complete by using the "ACME" OVEN THERMOMETER. It is reliable and price is reasonable. Write us for circular.

Respectfully,

**EVANS STAMPING AND PLATING CO.,**

TAUNTON, MASS.

C. H. MATTHEWS, Detroit, Mich. (Western Agent).

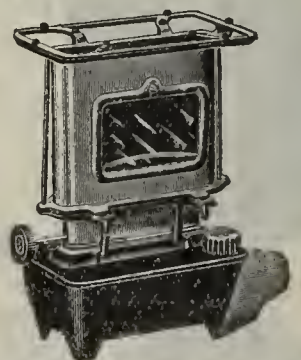
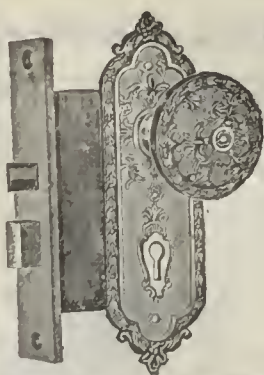
## THE TAYLOR & BOGGIS FOUNDRY CO.,

MANUFACTURERS OF

**Light Gray Iron Castings, Builders' Hardware.**

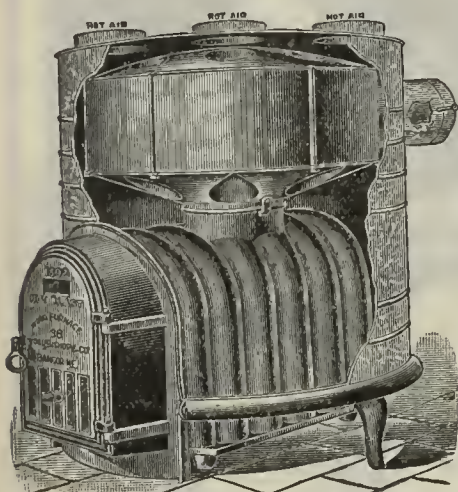
Dampers, Damper Clips, Oil and Gas Stoves, Furnace Lamps, Molasses Gates, Letter Boxes, Hardware Specialties.

**CLEVELAND, O.**





# WOOD FURNACES



THE HOT BLAST.

Made With SINGLE PIECE Fire Box Body—

a practically indestructible casting, heavily corrugated to stand the strain.

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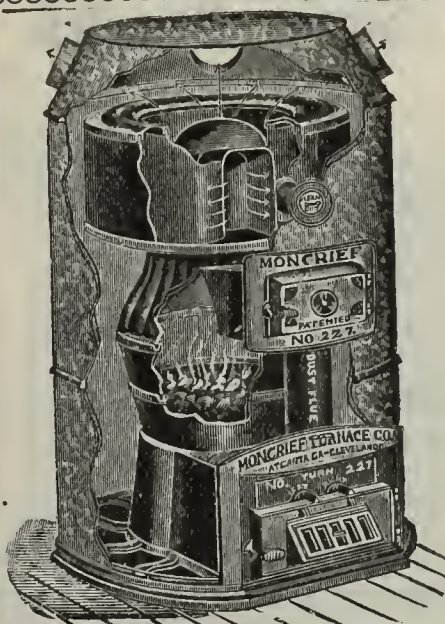
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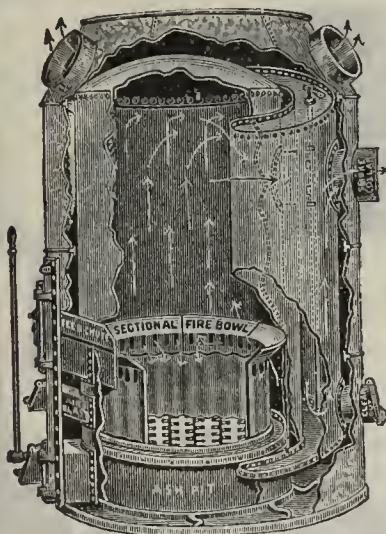
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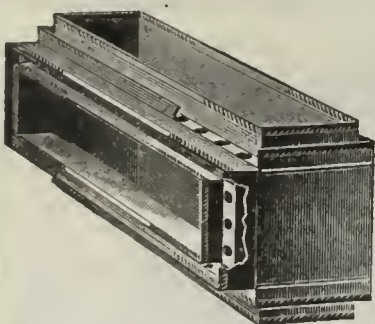
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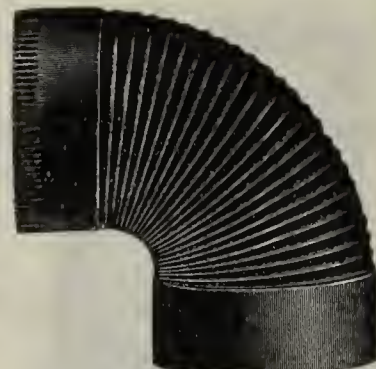
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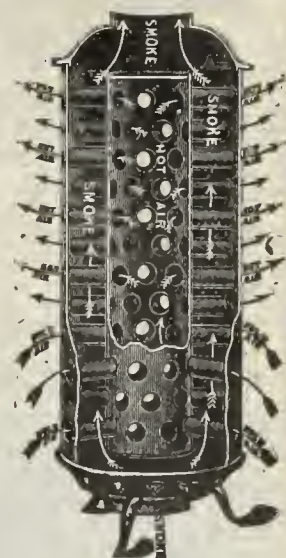
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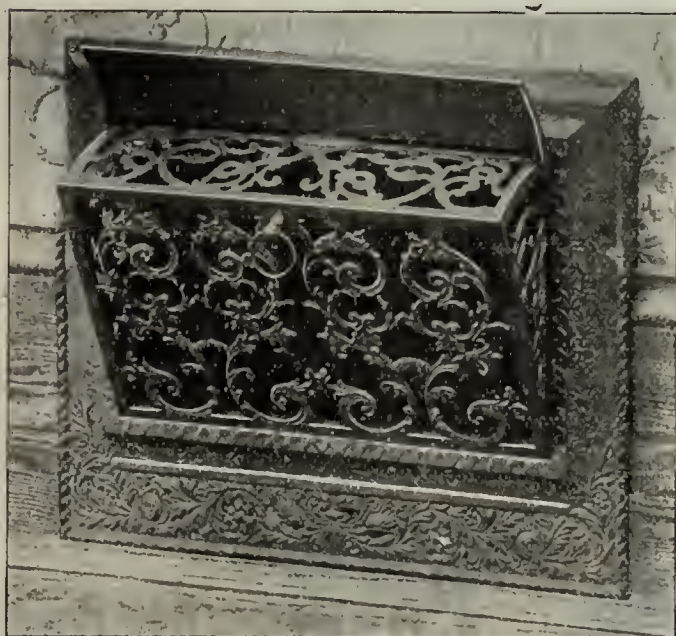
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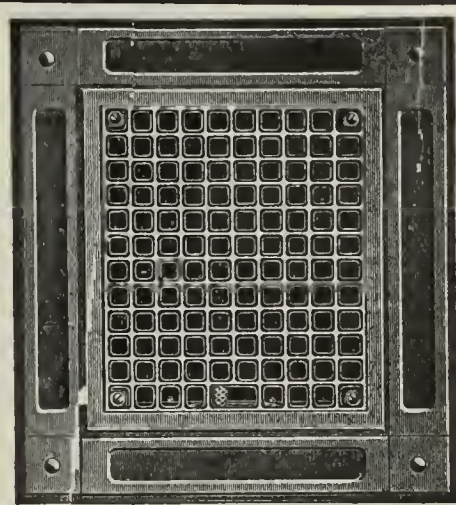
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|                                                                                                                                                                                                                                                             | Page.  |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|
| POINTS ON CHIMNEYS                                                                                                                                                                                                                                          | 7-32   |
| An illustrated article by J. L. Bixby, Jr., describing many details in chimneys, which cause trouble, and giving remedies. An important table is presented, of the sizes of chimneys required in dwelling houses, based upon the amount of work to be done. |        |
| DEFECTIVE FLUES                                                                                                                                                                                                                                             | 33-35  |
| This article presents information resulting from a wide, practical experience of the writer, and gives sound advice on some of the details of chimney construction.                                                                                         |        |
| HOW TO IMPROVE A WEAK CHIMNEY                                                                                                                                                                                                                               | 36-40  |
| VARIOUS FORMS OF VENTILATORS or CHIMNEY TOPS                                                                                                                                                                                                                | 41-45  |
| CONDENSATION IN STOVE PIPES                                                                                                                                                                                                                                 | 46, 47 |
| SMOKE PIPE FOR WOOD FURNACES                                                                                                                                                                                                                                | 48     |
| REMEDYING DOWN DRAFT IN CHIMNEY                                                                                                                                                                                                                             | 49-51  |
| CONNECTED FLUES DESTROY DRAFT                                                                                                                                                                                                                               | 52-55  |
| FAILS TO BAKE ON BOTTOM                                                                                                                                                                                                                                     | 56-62  |

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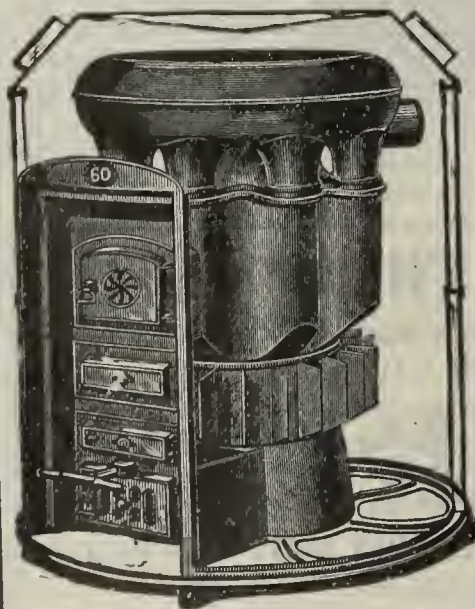
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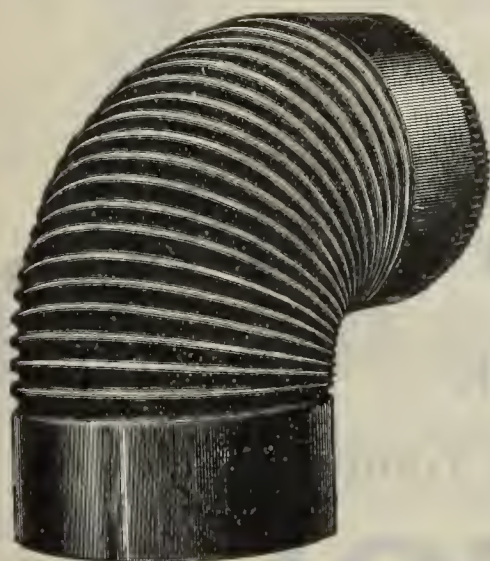
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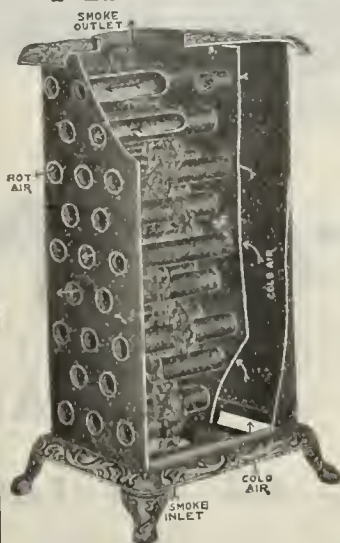
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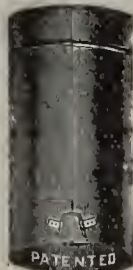


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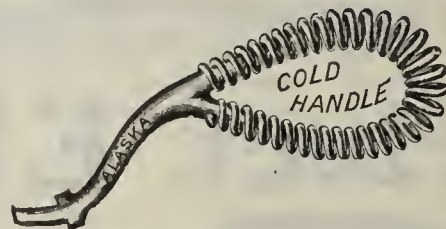
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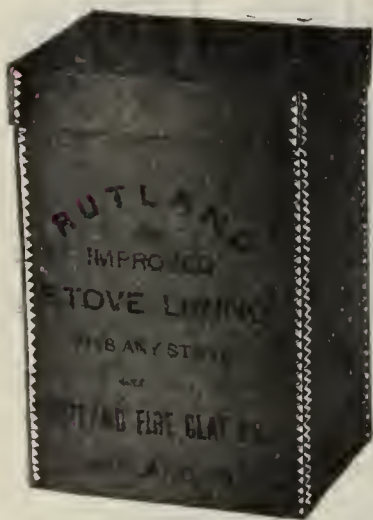
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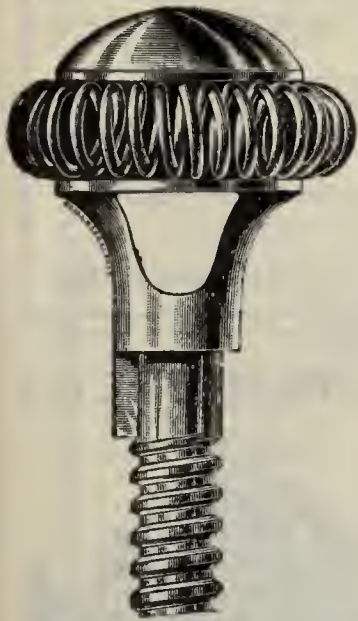
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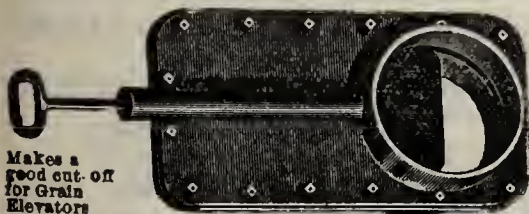
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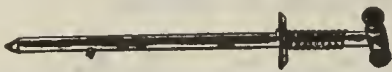
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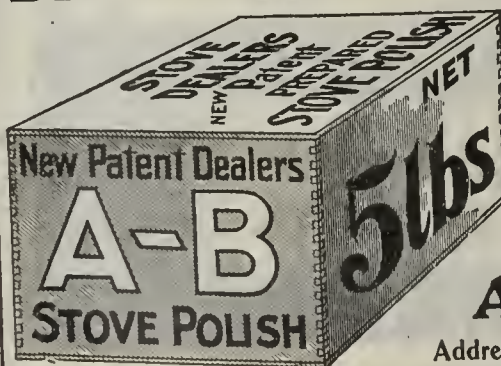
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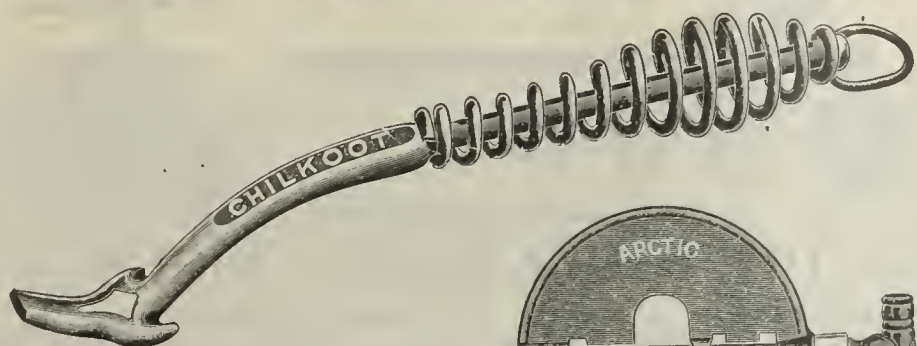
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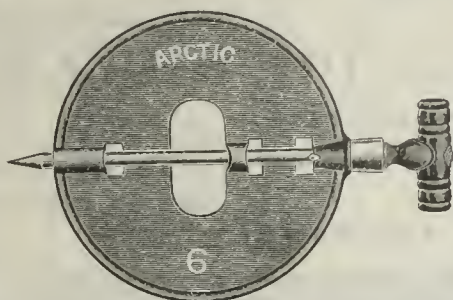
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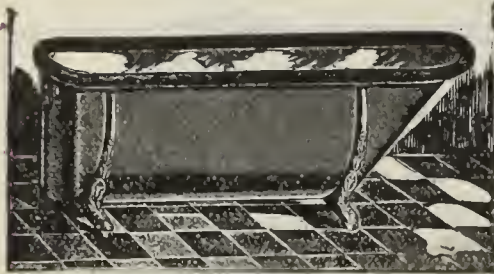
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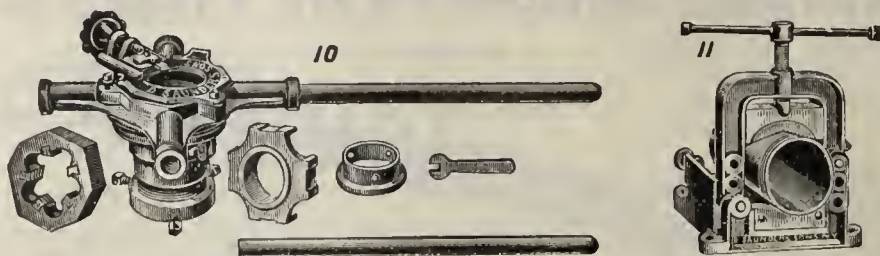
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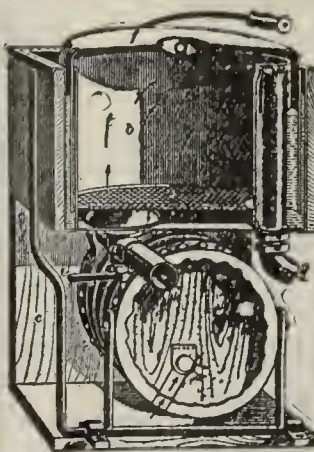
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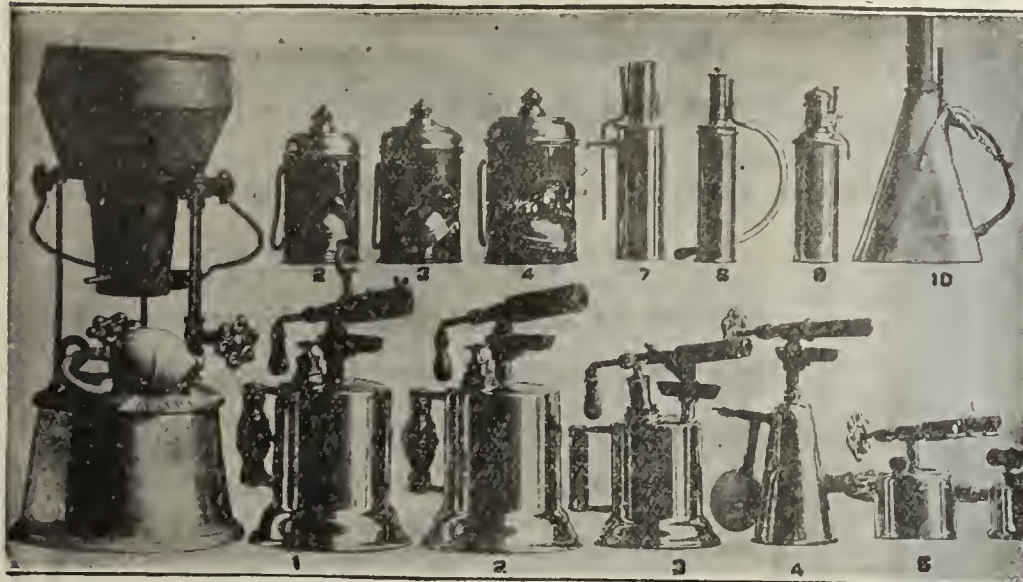


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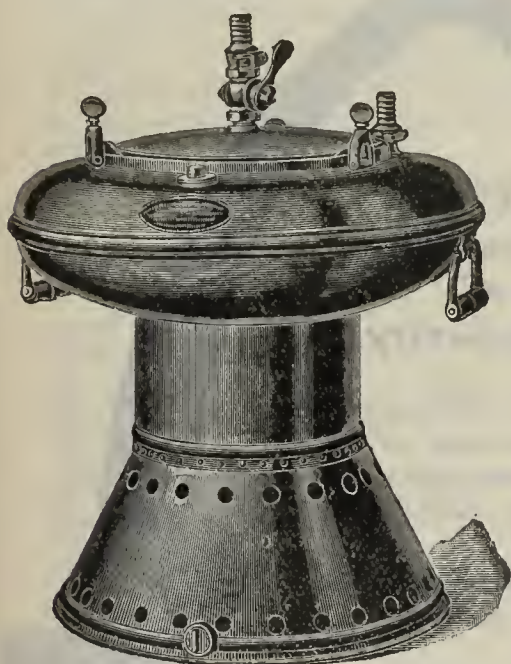
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# THE METAL WORKER.

NEW YORK AND CHICAGO.

New York, September 6, 1902.

DAVID WILLIAMS COMPANY, - - - PUBLISHERS.

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|------------------------------|---------|
| Volume LVIII.....            | No. 10  |
| Index to Reading Matter..... | Page 62 |

### Our Imports of Iron and Steel.

As foreshadowed for months in the market reports the imports of iron and steel into this country have assumed notable dimensions. During July the iron and steel products brought into this country from abroad were valued at \$4,163,147, as compared with \$1,958,579 in July, 1901, while the imports during the first seven months of 1902 figured up \$19,334,418, as contrasted with \$10,344,610 during the first seven months of 1901 and \$12,992,934 during the corresponding period of 1900. The figures for seven months, however, hardly reflect the magnitude of the movement, because it did not really seriously begin until the second quarter of the current year. This is reflected in the data published by the Treasury Bureau of Statistics. In April the aggregate was 46,018 gross tons, in May it was 82,235 tons, in June it rose to 98,526 tons, and as the table printed below shows, it reached 128,551 tons in July. Developments during the past month justify the belief that the July rate will not alone be maintained for the balance of the year, but that we may witness a further increase.

Imports of Iron and Steel.—Gross Tons.

|                                                           | July,<br>1902. | Seven<br>months,<br>1901. | Seven<br>months,<br>1902. |
|-----------------------------------------------------------|----------------|---------------------------|---------------------------|
| Iron and steel and manufac-<br>tures of:                  |                |                           |                           |
| Pig iron.....                                             | 62,156         | 23,980                    | 177,763                   |
| Scrap iron and steel fit only to<br>be manufactured.....  | 12,704         | 8,557                     | 48,650                    |
| Bar iron.....                                             | 3,726          | 10,070                    | 12,391                    |
| Bars, railway, of iron or steel,<br>or in part steel..... | 7,753          | 853                       | 21,475                    |
| Hoop, band or scroll.....                                 | 290            | 457                       | 2,739                     |
| Ingots, blooms, billets, &c., n.e.s.                      | 36,080         | 4,489                     | 113,264                   |
| Sheets, plate and taggers iron or<br>steel.....           | 262            | 2,191                     | 3,891                     |
| Tin plates, terne plates and tag-<br>gers tin.....        | 3,103          | 33,690                    | 39,669                    |
| Wire rods.....                                            | 2,311          | 9,858                     | 11,107                    |
| Wire and articles made from....                           | 166            | 2,106                     | 2,084                     |
| Totals.....                                               | 128,551        | 96,251                    | 433,033                   |

This table, of course, furnishes figures for only a part of the tonnage. The details relating to other branches of the trade disappear in the general figure of "all other manufactures," so that the actual tonnage is really larger. On the other hand we must take into account that a part of the goods imported are not intended for home consumption, but are re-exported under drawback arrangements. This is notably true of tin plate.

Then we consume a certain amount of foreign iron and steel at all times. This applies usually to iron bars, mostly Swedish material required for special purposes, to certain kinds of crucible steel and shapes made therefrom. Making all allowances, it looks now as though

we shall import iron and steel in different forms equivalent to at least 1,000,000 tons of pig iron and scrap in excess of our usual importations, or deducting old material, an equivalent of about 900,000 tons of pig iron, to get down to the foundation of it all. In other words, our home consumption may fall off at the rate of fully 1,000,000 tons per annum before we begin to feel the pressure upon our domestic producers, or we must in one form or other produce 1,000,000 tons more of material in its equivalent of pig iron before we can stop importations, the demand continuing at the present rate. That of course looks like a safe margin for a considerable time to come, but we know that production is going to increase before the close of the year and we have only too often witnessed a sudden falling off in the requirements of the country to feel particularly comfortable with a margin apparently so great.

### Price Cutting.

Owing to the activity of general business and the high prices which have ruled in the markets for raw materials in many lines, unusually little complaint has been heard this year in regard to the cutting of prices. Most manufacturers and dealers in the lines represented by this paper have been able in the past season to obtain about all the business they wanted without any special strenuous efforts. Quite lately, however, rumors have been current of concessions in prices made in some quarters, in order to secure business, which price cutting is held to be without justification. The folly of cutting prices when business is of satisfactory volume is so obvious that it seems scarcely necessary to call attention to it. When business is unusually dull and sharp competition prevails to secure a share of what trade is going, there is some excuse for those tradesmen who must have cash to offer some of their goods at a sacrifice. But no such excuse appears to exist at the present time. There is enough business to go around in nearly all lines, and it is to be hoped that those engaged in the trades in which our readers are interested will steadfastly resist the temptation to quote lower rates for any of their goods than are fully justified by the conditions of purchase and sale and of the general market. It is probably within the experience of all that one case of price cutting has in many instances caused the temporary demoralization of the entire market for certain lines of goods, which would otherwise have held firmly and yielded a reasonable margin of profit to the seller. Price cutting is seldom justifiable. It is an especially suicidal policy when business is of ample proportions and all tradesmen have the opportunity of making good profits, providing they exercise reasonable moderation in their desire for sales. The spirit of greed that tries to grab all the business in sight, regardless of the general good of the trade, should be discountenanced. "Live and let live" should be the motto of every fair dealing tradesman.

### The Need of Trade Education.

In a recent address on the subject of technical education in the South, delivered before the Georgia School of Technology, Richard H. Edmonds, editor of the *Manufacturers' Record*, made a very strong appeal to the



South to give its youth the opportunity of learning trades and handicrafts, in order to build up the young manhood and womanhood of that section of the country, as well as its material prosperity. Mr. Edmonds showed the great advances the South is making in manufacturing industries of all kinds and urged the provision of more technical and trade education, so that the boys of the South may be trained up to take their proper part in the industrial development of their section of the country. Within the past decade the capital invested in manufactures in the South has quadrupled, and with the development of the natural resources of that section of the country, now being rapidly pushed, the growth of its industries is likely to increase many fold in the years to come. All this will involve the need of a large body of trained mechanics and workers in the mills and factories which are springing up in all parts of the country south of the Mason and Dixon line. Only proper trade instruction can be relied upon to furnish the necessary skilled labor. The raw material for labor of this class exists in amply sufficient quantities in the South, and merely needs to be molded into shape to furnish all the skilled workers necessary. Mr. Edmonds' argument, moreover, will apply to other parts of the country as well as to the South. There is a crying need throughout the United States for more facilities for the trade and technical education of our boys and young men. As we have shown before, foreign nations have realized the supreme economic importance of trade training and are paying the greatest attention to this work at the present time, whereas the United States, as a nation, does not yet seem alive to the prime necessity of taking up and pushing this movement, notwithstanding that the markets of the world are awaiting her manufactures.

### Jobbers and Retailers.

The question of trade protection would seem to be rather a simple matter as between a jobber and a retailer in the hardware trade. The jobber builds up his business by cultivating the patronage of the retail trade. It matters not what other fields he may invade, as from none of them, and indeed not from all of them combined, would he receive sufficient trade to entitle him to a place as a hardware jobber. Railroad trade may be of enough importance to claim the attention of a special salesman, local manufacturing development may be large and varied enough to warrant a specialist to look after it, or a retail department may be a profitable adjunct, but it is absolutely necessary to have the trade of a large number of retail dealers. The interest of the retail dealer being the essential element should be conserved above all others by those who assume to conduct a jobbing business. This is the rule which should be laid down for the government of a jobbing house, and if it were carefully and rigidly followed would eliminate the friction which exists in too many sections. Representatives of jobbing interests freely acknowledge their dependence upon the retail trade, especially when some occasion demands a public utterance on the subject, but that they too often disregard the obligation resting on them of observing the rights of their best customers is shown by the charges brought against them whenever the relations of jobbers and retailers come up for discussion.

The recent destruction by fire of the co-operative village of Ruskin, Ga., marks the termination of a persevering attempt to maintain a settlement upon purely

communistic principles where the industrial possibilities were limited and the climate of such an enervating character as to discourage great physical activity. Ruskin was organized a number of years ago by about 100 persons, who planned to make a model settlement on purely communistic lines. All the original settlers put into the common fund the whole of their possessions and drew out from it simply enough to meet their absolute necessities, sharing all the agricultural products and dividing up among themselves the various duties of the community. On account of the reasons before referred to the community did not grow, but on the other hand lost in numbers by the departure of some of the members from year to year, until, of late, Ruskin was in a very unprosperous condition, with a small and needy population gaining a precarious livelihood from the fruits of the soil without means of earning more than a bare subsistence. The fire which has now destroyed the settlement merely hastened its inevitable extinction. Ruskin adds one more to the list of socialistic schemes which have been started in this country only to fail.

### A 2240-Pound Ton of Pig Iron.

Some months since a movement was started by some of the Southern blast furnace owners to adopt a uniform ton of pig iron of 2240 pounds, this to include Bessemer, foundry and forge iron. It is claimed, and with good reason, that the present practice of selling basic and chilled metal in tons of 2240 pounds and the other grades of sand iron at 2268 pounds leads to more or less confusion in the trade and should be eliminated if possible. In order to secure a uniform ton of 2240 pounds letters were sent out by a leading Southern furnace interest to Northern blast furnace operators, asking their co-operation in securing a uniform ton of 2240 pounds of pig iron to apply on all grades. The result of this movement has been that a number of the furnaces in the Mahoning, Shenango and Hocking valleys and elsewhere have already adopted the 2240-pound ton, and others will likely do so in a short time. The furnacemen whose stacks run on foundry iron point out the fact that much of their output has to be broken for their foundry trade, and in doing this the greater part of the sand and scale is removed and the buyer gets clean iron. For this reason many of the furnaces are already billing foundry iron at 2240 pounds to the ton and others will soon do the same. The furnace operators who run on Bessemer and forge, while lacking the arguments used by the foundry iron makers, are almost a unit in favor of the 2240-pound ton and will adopt it just as soon as certain contracts have been filled with buyers who insist on the 2268 pounds. It would seem to be to the best interests of the maker of iron, as well as the buyer, to have a uniform ton and the indications are that it will only be a short time until it is adopted.—*The Iron Age*.

One result of the anthracite coal strike and the prospect of scarcity and high prices of fuel in the coming winter is noted in New York City in an unusually active demand for flats and apartments. Thousands of families are said to be contemplating moving from houses into flat buildings, where the expense of heating is borne by the owners.

The report of the committee sent over to the United States, presented at the thirty-fifth annual Trades' Union Congress, which opened on Monday, in London, England, says that the committee were greatly impressed with the advantage American trades unionists possessed over the British by the willingness of the President and other officials to consult at all times with accredited union representatives. An interesting statement in the report is that the trusts up to now have made no bad use of their combinations, but, on the contrary, have tended to increased wages.



## REMINISCENCES OF A PIONEER STOVE MAN.

To the Editor: Doubtless you have observed that there are periods in the lives of men, after having passed the three-score milestone of life, when they become of a reminiscent turn of mind and their thoughts revert to incidents which occurred in earlier years. Especially is this true regarding those once active and prominent in the business affairs of their time. I began to acquire my practical experience in the year 1839, and I have passed more than 52 years of my life in one and another department of the stove industry, first as stove plate molder, second as superintendent of molding department and third as manufacturer. The establishment with which I was connected was located in Troy, N. Y.

Having been connected with a stove foundry in the infantile period of the stove industry, the growth and development of which I have witnessed until now it has reached mammoth proportions, I cannot divest myself of the interest I feel in all the latest and exceedingly attractive designs of parlor stoves and cooking ranges illustrated in *The Metal Worker*. Even hot air and hot water heaters and steam boilers, in their ornamentation and elegant proportions, evidence the refined taste of the designer and pattern maker. It is evident that the manufacturers of the present day fully appreciate the necessity of producing goods possessing artistic finish, which while reflecting credit upon themselves as manufacturers will also exert an influence of a refining nature upon every member of the various households wherein these goods are introduced.

Reference to the records of your list of subscribers for *The Metal Worker* about 1875 or 1876 will reveal the fact that I was the first subscriber and also the first to advertise in your excellent journal in this city. I introduced your canvasser to the late firm of Link & Mahony of this city, and they were the second party whose patronage was at that time secured by him.

In recalling the incidents connected with the stove industry of the country, my thoughts naturally revert to the pioneers, the actors, of those early years, and, if I may be permitted its use in this connection, "the promoters," now nearly all long since passed from earth to the land of "forever." It was my good fortune to have enjoyed the personal acquaintance of nearly every prominent stove founder and manufacturer in the period referred to. The leading stove manufacturers of the present day were either unborn or in their swaddling clothes when the great industry in which they are now so prominent was in its infancy. Were I to marshal all the names of those pioneers the number would require nearly a column of *The Metal Worker*.

I cannot refrain, however, from presenting to your readers several names of those who stamped their individuality upon the development of the industry referred to. Prior to 1830 Henry Stanley of Poultney, Vt., manufactured the Stanley parlor stove and a cooking stove for wood arranged with a rotary top. Mr. Stanley turned out an excellent quality of work, noted for its smoothness of surface. The Stanley parlor stove was during many years the most popular coal burning parlor stove on the market. Israel Rathbone, uncle to the late John F. Rathbone and Samuel H. Ransom and Albion Ransom, was the pioneer of the stove industry of Albany. The present firm of Rathbone, Sard & Co. of that city are the lineal successors therefore of Israel Rathbone. Their enterprise is fully recognized not alone in our own country but in other lands. John S. Perry and Mr. Littlefield, as also Shear, Packer & Co. of Albany, now all passed away, gave prominence to the stove industry of that city. The goods they produced made their impress upon manufacturers of other cities to the extent of compelling them to introduce stoves practically of the same design and finish and constructed upon the same principle—namely, the self feeding type. Jasper Van Wormer, now living, of Albany, is entitled to rank among the earlier manufacturers of that city. The old firm of Van Wormer & McGarvey were noted for the progressive spirit manifested by them

when they entered the field as manufacturers nearly 45 years ago. During many years the late firm of S. H. Ransom & Co. of that city did a mammoth stove business. Each and all of the above named persons and firms reflected credit upon the capital of our State because of their enterprise and business ability.

In Buffalo the old firm of Jewett & Root held high rank during many years. The boast of each member of the firm was that he was a practical mechanic, and I know that on more than one occasion their mechanical knowledge in the conduct of their business enabled them not only to maintain their manhood but their independence when their operatives sought to control the business of the firm. The name of the late Giles F. Filley of St. Louis will be readily recalled by nearly all of the manufacturers of the present day. A most genial, noble, large hearted man was he. I think his sense of business honor excelled that of any manufacturer or business man whom I have ever known. His last days were days of sorrow and sadness because of his overconfidence in one who posed as his friend and led Mr. Filley on to financial ruin. Mr. Filley in those earlier years contributed his full share to the upbuilding of manufacturing interests in St. Louis. In Detroit we have among the more prominent names that of Wm. H. Tefft, long since passed away. He was among the aggressive pioneers of that city, starting in the later sixties. In 1860 there was not a stove manufacturer in that city. Neither was there as late as 1865. I sold stoves in Detroit made by my firm in this city in 1865. There was no foundry there then.

Troy has produced men connected with the stove industry whose history will compare favorably with that of any of those named. In 1812 a man by the name of Stratton established a small foundry on Sixth street, south of Broadway, for the purpose of conducting a general jobbing business and also incidentally produce some stoves, which we may readily conclude were of a very primitive character. An incident connected with the Stratton plant was told me many years ago by a man then far advanced in life. He informed me that in 1814, subsequent to the battle of Plattsburgh and Champlain, many of the English soldiers deserted and came down into this section of the State. Among the number were some half dozen practical molders, and Stratton gave them employment. Those British soldiers therefore may justly be regarded as having been genuine pioneers in the molding of stoves in this city of Troy. The late James Wager during many years owned and occupied the Stratton site as a stove foundry. He was succeeded by the following named firms, who owned and conducted business on the same site; Wager & Dater, 1840; Wager, Pratt & Co., 1846; Wager, Richmond & Smith, 1852; Smith & Sheldon, 1855; Smith, Sheldon & Co., 1858, and Sheldon & Greene, 1861. In 1878 the old plant was disposed of to parties engaged in the shirt and collar business. It is now used for that industry. Among the early firms of Troy I recall the following: Johnson, Geer & Cox, John Morrison, Morrison & Manning, Davy & Anthony, Davy, Ingram & Phillips, Anson Atwood, Swett, Quimby & Perry, Fuller, Morrison & Co., Fuller, Warren & Co., Morrison & Colwell, Eddy, Corse & Co., Bussey, McLeod & Co., Hicks & Wolfe and others.

I find in looking over the record of those formerly conducting the stove business of this city that I am the oldest in years of service connected with the industry. G. G. Wolfe, of the old firm of Hicks & Wolfe, still survives. Esek Bussey is still living, although not as long connected with the business as either Mr. Wolfe or myself.

CHAUNCEY O. GREENE,

Formerly of SHELDON & GREENE.

TROY, N. Y., August 28, 1902.

THE NEW YORK COMBUSTION COMPANY, with principal office at 259 Washington street, Jersey City, N. J., have been incorporated with a capital of \$1,000,000 to manufacture Heaters, Furnaces, &c. The incorporators are W. S. Fennendo, Carlyle Garrison and Michael J. McTiernan.



## STICK TO THE OLD MAN AND THE OLD STAND.

BY JEEMS.

The retail stove business, with the other lines usually attached to it, including plumbing, is not an inviting field as a rule for the sons of those who have started and built it up. For some reason it will usually be found that the sons early imbibed a distaste for the father's trade. They have sought new fields for business ventures which very often have not proved as favorable as if they had stuck to the old man and the old stand. To be sure, there are many notable instances whose history would doubtless make very interesting reading for *The Metal Worker's* patrons, and it will often be found that the downfall of a family dates from the time when the business of father and son parted. The disappearance of old concerns is perhaps much more rapid in New York and vicinity than elsewhere, as trade conditions change greatly in large cities.

A rather unusual circumstance therefore happened in Brooklyn the past week, in which the father transferred a good going business in furnaces, stoves, plumbing, &c., to his son for the consideration of \$1, &c. The business had been originally given to him by his father for the same price, so that the grandson continues it with ample capital and a trained knowledge, as he learned both plumbing and tinsmithing and is a thorough mechanic as well as a good business man. He seems destined to be successful, as he has grown up with the customers and neighbors. The facts in this case are as follows: Henry Leach, the grandfather of the present proprietor, established the business in the same store, 1103 Fulton street, Brooklyn, in 1861. He had only a small capital but a helpful family who assisted in the business. He retired in 1881 with an ample competence, giving the stand to his son, Henry, who now in his turn transmits it to his son. The senior will spend his time in cutting coupons and collecting interest and rents, and will increase the pile that will come to the family in the future.

There is no intention to be eulogistic in announcing this matter, but simply to point out an exceptional case in Greater New York. A few others can be named. The descendants of W. & J. Dixon, Atlantic street, Brooklyn, continue a very old establishment in the same family, and M. Abbott's Sons, Eighth avenue, New York, will probably be handed down to grandchildren. So it would appear that it is not a bad idea to stick to the old man and the old stand.

## THE GRATE-SPIRAL HEATER.

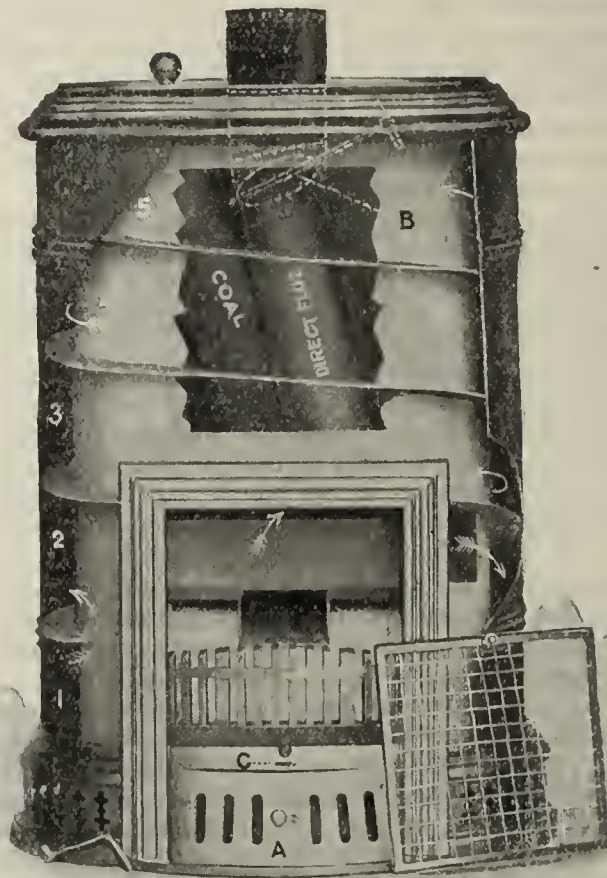
An illustration is presented herewith of a new portable heater or stove manufactured by F. D. Woodruff, 142 Michigan street, Chicago, who is also the inventor and patentee. The heater has many new features. Its name indicates the leading principles of its construction, the word "grate" referring to its fire place effect and "spiral" to the auxiliary heating drum. It is designed for the use of hard coal or coke, but its construction is peculiarly favorable to the use of gas or oil gas.

The fire pot in this heater is low down, being closely modeled from an open fire place, and is supplied with a shaking grate which will not clog. This fire pot extends back into the open court of the heater and is supplied with cold air on all sides. In the open court of the heater a magazine is placed, and the gradual feeding of the fuel to the fire pot gives the pleasing effect of a constantly glowing fire. The fire place has a mica front with the mica so ingeniously fastened to the frame that it shows neither joints nor fastening and it can be readily cleaned on the inside. The mica front allows perfect control of the fire by dampers and prevents the escape of dust or gases. By removing the mica front and opening the direct draft damper an open ventilating fire is secured, but the heating power is then much reduced.

Passing to the drum, the figures and arrows on the illustration represent the several parts and the course of the products of combustion. From the grate the

products of combustion pass to the first or lower flue of the heating drum, which may be said to be independent of the fire place. This is a double sheet iron drum with a space of  $2\frac{1}{2}$  inches between the two drum casings. Spiral floors are placed between the two drum casings forming spiral flues  $2\frac{1}{2}$  x 10 inches. A flat flue like this will radiate more heat than either a square or round flue of the same capacity. From the throat of the fire place (second arrow) the course of the first flue is spiral downward to the opposite side of the fire place, where the spiral floor is cut short, allowing the draft to return over itself, and from this point on is a continual spiral course upward, the products of combustion entering the stove pipe through dotted lines just above the direct damper B. The length of flue travel is 28 feet in the smallest size. In this heater all the flues are vertical and every inch is therefore radiating surface.

Instead of the cold air passing directly from damper A to the fire, as in ordinary heaters, it passes across



*The Grate-Spiral Heater.*

back of the fire pot and then returns over itself to the front of the ash pan, thus making a double cold air circulation under the ash pan, and, becoming heated on its way to the fire, is an aid to combustion. The claim is made that these heaters will save one-third of the fuel as compared with an ordinary stove. The floor space required for the medium size of this heater is 18 x 36 inches oval, and it is 58 inches high. Other interesting details are fully described in an illustrated circular issued by the manufacturer.

## The Western Stove Company of Canada.

F. J. Taylor, who has been purchasing agent of the Gurney Foundry Company, Limited, Toronto, Canada, for 12 years, resigned his position August 30 for the purpose of entering into the manufacture of stoves and ranges on his own account. He is organizing the Western Stove Company, Limited, with a capital of \$50,000. Associated with him is J. J. Cunningham, formerly mechanical superintendent of the Gurney Foundry Company. They have purchased the plant of the National Iron Works, Wingham, Ontario, and expect to put stoves and ranges on the market this fall. The new company will be pleased to receive from supply manufacturers copies of latest catalogues and best discounts, addressed to them at Wingham.



### Retail Prices of Stoves.

In discussing the trade situation and the question of stove prices this fall, Charles E. Hughson, secretary of the Knapp & Spencer Company, Sioux City, Iowa, is reported by a local paper to have expressed the following views:

Notwithstanding prices are about 10 per cent. higher, our sales have been at least 25 per cent. greater than last year. We have observed also that the demand has been for the very best grade of goods. The principal cause of the advance is that the price of labor is higher. Every year, in April, the stove makers get together and make up a schedule of wages which they ask the manufacturers to sign and the schedule is usually signed without any trouble.

Last April the schedule was made higher and the people are paying the freight. Of course the price of iron and steel has also been advanced and this advance enters into the general increase of prices for hardware as well. The foundries have been very busy, and it has been a very prosperous year both for the manufacturer and the employee.

### Buckwalter Stove Company.

A stove catalogue which gives evidence of having been arranged with careful attention to the requirements of the trade and which reflects great credit upon the compiler is that just issued by the Buckwalter Stove Company, proprietors of the Continental Stove Works, Royersford, Pa. It is a volume of 192 pages, bound in colored paper covers, and is known as Catalogue No. 36. An interesting feature of the early portion of the work is the presentation of excellent likenesses of the officials and representatives of the company arranged in groups upon facing pages. Other features of the opening pages include an announcement to the trade, a *fac-simile* of the guarantee given by the company with every Continental stove or Eclipse furnace that may be purchased, a statement of terms, a telegraphic code, suggestions for ordering repairs and a price-list and classification of castings for repairs.

In the make up of the matter the ranges are first considered, these occupying something like 80 pages of the catalogue. The assortment presented is a varied one, the goods being offered under such names as the Grand, Model, Royal and Magic Apollo ranges, and the Art Canopy, Prize Canopy, Canopy Dawn, Canopy Fair, Canopy Grand, Star Canopy, Candid, Pluck, Ideal Apollo and Home Canopy cook stoves. Among the heaters the leading place is occupied by the Colossus, a full revertible flue base burner, made in four sizes and as a double heater. Following this is the Happy Greeting, also a powerful double heater and circulator, which has been on the market sufficiently long to establish for itself an enviable reputation. Another member of this general class is the Model Ringgold, offered in a number of sizes. Other heating goods include surface burners, oak, air tight, globe, cannon and laundry stoves. Several lines of furnaces are also illustrated and described, as well as ventilating grates and heaters.

The sales agencies of the manufacturers are the Chicago Stove & Range Company, 237 to 245 East Twenty-sixth street, Chicago, Ill., and E. F. Kurtz, 43 North Second street, Philadelphia, Pa. Mr. Kurtz makes announcement among the closing pages of the catalogue that he is prepared to furnish repairs of all kinds for any cook stove, range or heater made in the United States.

### Some Crawford Ranges.

A 12-page folder which is being distributed among the trade by the Walker & Pratt Mfg. Company of Boston, Mass., sets forth the merits of some of the Crawford ranges, which are offered in many styles and sizes. In connection with the Home, Empire and Charm styles of Crawford range the manufacturers use a heat indicator, which shows at a glance the condition of the oven for cooking purposes, and it can also be furnished with the Villa Crawford if desired. The latter range is a new construction, somewhat simpler than some of the others and therefore a little lower in price. The con-

structive features, however, are such as to render it attractive in appearance and satisfactory in operation. The Home Crawford is a representative of the company's highest grade of stove, with full size square oven fitted with two oven racks and triple asbestos oven back. The interior of the oven is treated with aluminum, which renders it light. The oven top is sectional and will not crack, while the bottom of the oven has a removable panel and will not warp. The Empire Crawford, also shown in the folder, is of first quality but a little smaller than the range just described. It is fitted with improved Dockash grate, by means of which the ashes and clinkers are quickly removed. The Charm Crawford is another member of this general class and has proved very popular. It is suitable for families who do not care for so large and costly a range as the Home or the Empire. The constructive features are of a modern type, and a single damper governs all the operations of the range.

### Buck's Steel Ranges

We have received from Buck's Stove & Range Company, St. Louis, Mo., a 56-page supplement to their Catalogue No. 102. The matter relates to Buck's steel range series, which are illustrated in great profusion. The ornamentation combines the judicious use of nickeled parts in combination with the black iron surfaces, producing very striking effects. As the manufacturers put it, "The nickeling is heavy and in the right place." The range body is made of one solid piece, and as all corners are solid there is no chance for warping. The oven is constructed of two pieces of steel braced in the center of the bottom with heavy riveted seam and also by heavy cast frame. It is lap jointed and has a large surface exposed to the heat. The bottom of the oven rests firmly on a rigid flue strip and is claimed to bake and roast evenly throughout. The oven top is made convex and has an extra heavy base to prevent deflection, which also acts as a rest to all key plates. There is a cast shield extending from the fire box, which protects the oven top from hot coals spilled by an overfull fire box. It also prevents the oven from becoming too hot when the damper is down. The flues are lined with heavy asbestos board, which, as is well known, is an excellent nonconductor. The fire box is fitted with hot blast linings, which are referred to as a new departure in range building. The ash pan is large and the other features about Buck's steel ranges are such as to command the careful consideration of an intelligent trade.

The goods shown in the supplemental catalogue are made in sufficient variety to meet all ordinary requirements, and while some of them are intended for burning hard coal or coke as a fuel, others are designed for using soft coal or wood and still others for using wood exclusively. Reference is also made in the catalogue to broilers, water fronts and backs, high closets and high shelves. A sectional view of a steel range is given with the various parts numbered and referring to an explanatory table so as to facilitate the ordering of repairs by the dealer and thus prevent many of the annoying mistakes which are constantly occurring in this branch of business.

Accompanying the catalogue is a base burner supplement to Catalogue No. 102, referring especially to Buck's Radiant base burner for anthracite coal or coke. The heater is a handsome specimen of the stove makers' art, and when in full operation presents a most brilliant effect. The constructive features are of the very latest type, while the ornamentation is dazzling in the extreme. The supplemental catalogue describes the features at length, while the illustrations show the stove mounted and also in various stages of dismantling. The matter is arranged in a very neat and attractive style and reflects much credit upon the compiler.

At Huntington, W. Va., on August 28, the almost new plant of the Huntington Stove & Foundry Company was burned, entailing a loss of nearly \$30,000. It was insured for \$10,000. The fire caught from the foundry cupola.



### New Stove Company.

The Sangamon Mfg. Company, Springfield, Ill., are preparing to occupy the buildings which were constructed for the Patrons Mfg. Company, no longer in existence. The main building is over 600 feet long and the smaller building, which will be used as a foundry, is 80 feet square. The beds for the engines, water pipe connections and other necessary fixtures are already in the buildings and the installation of machinery began on September 1. Additional machinery will be purchased later. The Sangamon Company will manufacture mining cars, mining tools and stoves. Considerable business for mining cars and mining machinery has been offered, but thus far the company have refused all orders, but expect soon to be in a condition to accept some of the contracts. The directors of the company are as follows: Thomas White, president; L. K. Davis, secretary and treasurer; W. A. Colvin, secretary Board of Directors; Irving Barker, Harmon Brown, Frank P. Dooling, John Ettelbrick, R. A. Higgins, N. R. Johnson, W. A. McCullough, Edward Ready.

### The Larson Oil Burner.

The Economic Burner Company, 968 Broadway, Oakland, Cal., are manufacturing the Larson oil burner, which is designed to use the lowest grade of distillate or high gravity crude oil for operating furnaces, boilers, family ranges or stoves. The burner is stated to be totally different from anything previously brought out in this line. It converts the oil gas while in operation and requires no labor or trouble. The burner is started by simply opening a valve about one-fourth of a turn, allowing the oil to flow in the burner and applying a match. In less than five minutes the gases generate and the burner is operating, the power of the flame being easily regulated. A feature of the burner is the fact that it can be taken apart, readjusted and replaced in less than ten minutes. It is stated that 1 gallon of distillate will burn from four to five hours in a small cook stove or range, heating the entire stove and water back and producing a perfectly even heat. Four sizes are manufactured, which present a sufficient range of heating power for all purposes. The company have issued an illustrated circular giving views of numerous dwellings, churches, office buildings and public institutions heated by oil through the use of this burner. J. E. Larson is the inventor and patentee.

### The Cleveland Gas Range with Reservoir.

The Cleveland Steel Range Company, Cleveland, Ohio, have issued a circular illustrating their Gem Ideal and Grand Ideal gas ranges. These ranges present a new feature, consisting of the addition of a reservoir to secure a supply of hot water. This reservoir is constructed of polished copper and is placed over special burners arranged in a bracket at the side of the range. These are large and powerful burners and are directly underneath the tank, ready for operation whenever desired. The reservoir may be removed and the range can then be converted into a full six-hole top. These ranges may also be converted into water heater ranges and connected to a circulating boiler by the use of water coils furnished by the company. In the construction of the reservoirs the best 14-ounce cold rolled copper is used. The reservoirs have a high nickel plate finish with enameled cast tops.

### The Acme Oil Burner.

The Acme Stove & Light Company, 59 Fulton street, New York, is the title of a newly incorporated company, with an authorized capital of \$500,000, organized to manufacture and handle the patented Acme burner for general heating purposes in domestic use. The burner is the invention of F. B. Ferguson of Brooklyn, N. Y., who is the vice-president of the company. The other officers are W. S. Estey, president, and E. R. Brush, treasurer. The Acme burner is designed for burning kerosene oil as fuel, and it can be set directly

in a grate without making any changes. The operation is claimed to be so simple that it can be used with safety by the average domestic. It can be applied alike to cooking ranges and heaters. The manufacturers state that a complete heat is obtained in from three to five minutes after lighting, and that once started all the heat is retained, a pure, odorless gas being produced. Any clean screened oil can be used in the apparatus. Experiments made with California oil are said to have been so successful that the company have received a number of orders for the burner from the Pacific Coast. They are now ready to supply the burners in a limited way, but will shortly increase their capacity of production.

### ODD PLATES.

THE MARCH-BROWNBACK STOVE COMPANY, Pottstown, Pa., are favoring their friends in the trade with a poster calendar for the closing months of the year, beginning with September. It is bound at the top with a metal strip, and is arranged with a loop so that the dealer can hang it in a conspicuous place in his store. The upper part of the poster carries a general view of the Crown Low Down Furnace, the outer casing being removed so as to show the internal construction as well as the passage for some of the air currents. The leaves carrying the figures of the days and weeks are printed in white on a ground work of olive green, and give, in addition, the various phases of the moon. A sheet is also provided giving a calendar for the 12 months of 1903.

WILLIAM J. H. GLUCK, Baltimore, Md., sends us a package of circulars relating to some of the many specialties with which he is prepared to furnish the trade. Among the advertising matter is a circular of the Gluck Four-Hole Cook Stove, which is referred to as "the culmination of 25 years' experience; every feature that concerns the art of cookery has been investigated; every principle involved in the theory of drafts, juxtaposition of flues, size of fire box, shape of oven and the laws of heat and air, has been thoroughly examined and appropriated." Still other claims are made for the Stove, which in appearance is neat and attractive. Reference is also made to the Gluck Oil Heater, which has a new style of bail serving as a support for the cylinder when tilted, while at the same time the shape of the ball keeps it from the body of the Stove and prevents it from becoming hot. Gluck's Steam Cooker, a line of Hot Plates and a varied assortment of Tinware and miscellaneous goods are also referred to.

LOU BAKER of the Portsmouth Stove & Range Company, Portsmouth, Ohio, has just returned after an absence of several weeks on the road in the interests of his company, whose motto is "The Busiest Stove and Range Makers on Earth." Mr. Baker reports business conditions as being all that could be desired. His company are receiving all the orders they can possibly take care of, the only difficulty just now being the prevailing one of inability to secure supplies of materials that enter into the production of their output.

At the annual meeting of the stockholders of the Pittsburgh Stove & Range Company, held in the offices of the company, Allegheny, Pa., on Monday, September 1, the following directors were elected for the ensuing year: John B. Nicholson, Charles H. Bradley, George W. J. Bissell, James F. McKee, W. S. Huntley, A. M. Nepper and John S. Graham. The board will elect officers this week.

THE RICHMOND PATTERN WORKS, Richmond, Va., of which C. M. Liphart is the proprietor, will be extended by the addition of another floor. The product of this plant includes Patterns of all kinds in wood and metal, particular attention being given to the designing and construction of Stove Patterns.

ON account of the rush of business and the bright future, and to obviate the necessity of operating at night, the S. Obermayer Company of Cincinnati, Chicago and Pittsburgh, manufacturers of Foundry Facings, Supplies and Equipments, have let contracts for an additional factory building to the Cincinnati plant.



The extra addition will be a three-story brick building 60 x 90 feet, and will increase the capacity of the Cincinnati plant about 33 1-3 per cent. The general offices of this company are at Cincinnati, Ohio.

GEORGE M. CLARK & Co., Chicago, manufacturers of Jewel Gas and Gasoline Stoves and Steel Ranges, are favoring the trade with a series of artistic cards calling special attention to their line of coal and wood Steel Ranges. We have received a set of five of these cards. They differ in color, design and printed matter, and are of such an original character in every respect that they can hardly fail to claim attention. Each card is surrounded with an engraved border printed in separate colors from those forming the body of the card. The printed matter is cleverly conceived, being necessarily brief but striking.

THE MICHIGAN STOVE COMPANY, Detroit and Chicago, favor us with a specimen of the blotters which are being sent to their agents for advertising purposes. Very appropriately the blotter requests those who receive it not "to blot" from their memories the fact that Garland Stoves and Ranges cook food and warm homes for millions.

THE PITTSBURGH STOVE & RANGE COMPANY, Pittsburgh, Pa., are bringing out a soft coal Range and a new Heating Stove designed to burn soft coal without producing any smoke. Details regarding these new constructions will shortly be ready for the information of the trade.

THE CHICAGO FURNACE SUPPLY COMPANY, Chicago, have added 1700 square feet of floor space to their factory at 68 to 70 West Monroe street and have installed additional machinery for the manufacture of Stove Pipe and Stove Pipe Elbows. They are now manufacturing two lines of Wall Pipe, one in sections and the other in long lengths, with or without slips. A new illustrated catalogue has recently been issued describing the Furnace Pipe and Fittings, Registers, &c., manufactured by this company.

THE B. C. BIBB STOVE WORKS, Baltimore, Md., are offering an interesting assortment of specialties for the season's trade and look for a very gratifying volume of business. Among their leaders may be mentioned the Arcadian, a six-hole Range of attractive exterior and embodying the modern features. Nickel is judiciously employed in the ornamentation and contrasting sharply with the black iron surface makes a very attractive showing. The company manufacture, in addition to a large assortment of Stoves, Ranges, &c., an extensive line of Fire Place Heaters, which have established an enviable reputation.

DANIEL PRINTZ is now president of the Reading Stove Works, Orr, Painter & Co., Reading, Pa. Last week at a special meeting of the Board of Directors President Harry Orr and Directors Jesse Posey and Charles H. Williamson resigned. Daniel Printz and Charles Bren-eiser were elected to fill the vacancies. Mr. Printz was elected president and at once assumed charge. He is now holding a similar position with the Reading Wood & Pulley Company. Mr. Orr remains on the Board of Directors and on the Executive Committee.

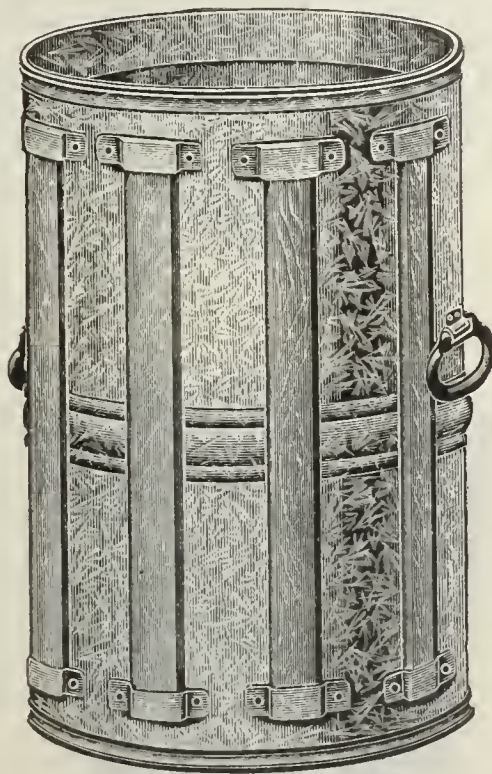
THE Stove plant of F. & L. Kahn Bros. & Co., Hamilton, Ohio, will be enlarged in the near future by the addition of a brick building, 224 x 248 feet, which will be added to the foundry proper and employ over 350 molders.

THE stockholders of the Home Stove Company, formerly at Greenfield, now at Indianapolis, Ind., are having serious differences. The Indianapolis News states that Louis Hitzelberger, George Vondersaar and Frederick H. Winters, minority stockholders, have applied to the Superior Court to appoint a receiver for the company. George Alig, Sr., who controls the stock, and George Alig, Jr., and Herman R. Frauer are made defendants. The charge is made that, although the company's operations have been profitable for several years, the stockholders receive no dividends and the complain-

ants are given no opportunity to see the books. It is asserted that the defendants are trying to freeze out the minority stockholders.

### L. & G. Ash Cans.

We present herewith an illustration of one of the new galvanized iron ash cans manufactured by the Lalance & Grosjean Mfg. Company, 19 Cliff street, New York. These cans are made of heavy galvanized sheet steel, and are designed for withstanding hard usage, being strengthened with wood staves firmly riveted to the body of the can. It is corrugated in the center to add to its stiffness, and has a heavy rim riveted around the top,



L. & G. Ash Can.

with heavy inserted bottom also riveted to the body of the can. These cans are made with side handles, and are guaranteed to stand a maximum of hard wear without damage. They are made in four sizes, with diameters of 15, 17, 18 and 20 inches respectively, all being 26 inches in depth. The cans are supplied either with or without covers. Galvanized covers with handles are made to fit each size of can.

### Frink's Reflectors.

That good stock needs good lighting is a truth realized this season as never before by the leading merchants throughout the country, as evidenced by their orders for reflectors to the well-known house of I. P. Frink, 551 Pearl street, New York. Among the many contracts for Frink's special patent window reflector and showcase lighting in hand, or recently filled, we are advised of the following: Gimbel Bros., Philadelphia, also their Milwaukee store; Siegel-Cooper Company, New York City; Bloomingdale Brothers, New York City; the large new buildings of Saks & Co., and R. H. Macy & Co., New York City, two stores which because of their location have attracted general attention; the Washington Arcade, Detroit; the Kennedy Furniture Company, Butte, Mont.; the Derby Desk Company, Boston; L. Hammill & Co., Mobile, Ala., who have one of the finest store buildings in the South; J. N. Mockett, Toledo, O.; Hannifin Dry Goods Company, Milwaukee, Wis., and "The Leader," Minneapolis, Minn.

In addition to their special line of reflectors for window and case lighting this concern manufacture a full line of cluster reflectors, mirror shades, &c. The former are well adapted to the lighting of store interiors, being preferred by many to the inclosed arc. The Wadleigh High School, New York City, about completed, has some 800 Frink clusters, which are the standard type of



the New York Board of Education. The additional fixtures in this building, consisting of ceiling coronas with bent glass domes and arch reflectors, were all furnished by this firm. Their catalogue, which fully illustrates and describes their fixtures, will be sent those interested on request.

### The Armstrong Fastener and Seal.

This device consists of a hinged strip attached to lid of the pail, as shown in the cut, with an ingenious fastening through which is passed a lead and wire seal, similar to those used on freight cars. It is designed for sealing oyster, fish and similar returnable pails. The seal is put on by the shipper, the record is taken by the carrier, and if the package arrives at its destination with the seal unbroken, any question of shortage obviously lies between the shipper and the purchaser. If the seal has been broken the shortage can be definitely placed on the carrier. By impressing different numbers

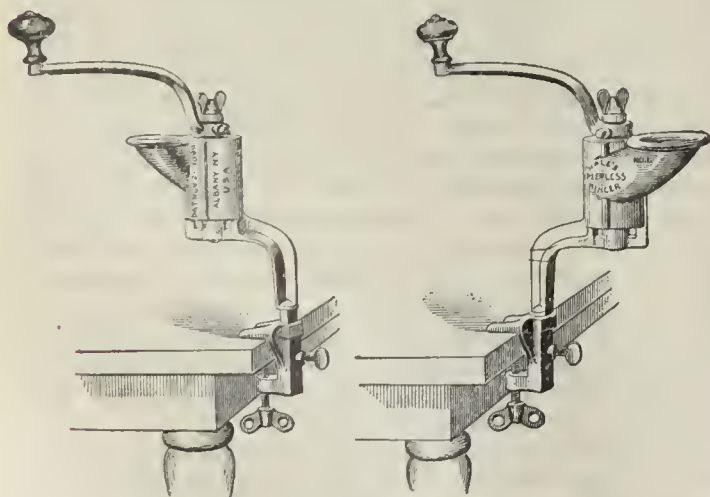


*The Armstrong Fastener and Seal.*

on the lead seals at division points en route, express companies can locate the point where breakage occurred, thus protecting their interests. The Armstrong Fastener & Seal Company, 207 Sixth avenue, Des Moines, Iowa, are offering the fastener and seal.

### Hall's Peerless Mincer.

The Troy Nickel Works, Albany, N. Y., are offering the food chopper shown in the accompanying cuts. The clamp is separate from the body and can be clamped on



*Fig. 1.—Hall's Peerless Mincer.*

a shelf or table to remain permanently if desired. The body at any time can be quickly attached to the clamp, and can be placed in four different positions over the

shelf or table, or reversed when a pail, jar or barrel may be placed to receive the product after being minced. The crank revolves horizontally with the shelf or table to which the mincer is fastened, doing away, it is remarked, with the necessity of stooping, which is tiresome. The mincer is added to as neat, as everything put in the hopper must pass down through the knives



*Fig. 2.—Parts of Hall's Mincer.*

and through one outlet into the receptacle, avoiding the leakage of fruit juices or other liquid. It is explained that the construction of the mincer is such that it is easily taken apart and put together when occasion requires, that it is easily and quickly cleaned after use, that satisfactory results in mincing are secured with little force, that the knives are of hardened steel and all the parts so adjusted that there is the least possible wear. It is stated that the mincer will cut (not mash) into clean cubes anything that is usually chopped in a chopping bowl. Among the articles that it will mince the following are mentioned: All kinds of raw or cooked meats, codfish, clams, figs, raisins, peppers, apples, tomatoes, grapes, peanuts, nuts, corn, bread and crackers.

### Simplex, Pendulum Model, Time Recorder.

The new model Simplex recorder, manufactured by the Simplex Time Recorder Company, Incorporated, of Gardner, Mass., provides a most satisfactory system of keeping the time of employees. In order to register it



*Simplex, Pendulum Model, Time Recorder.*

is only necessary to push a button bearing the number of the employee. The construction is such that every button is locked, except the one in use, thereby preventing one person registering for another without a separate ring of the alarm gong. This recorder requires no keys, cards, ink ribbon, type wheels or "in" and "out" levers, and will handle 100 men in one minute. It is made in three sizes, for 30, 50 and 100 men, the largest size taking a wall space 15 x 42 inches. The clock is a Seth Thomas, 15 day, pendulum movement.

MONTANA HARDWARE COMPANY, Butte, Mont., have recently bought out the Hardware and House Furnishing department of the Bee Hive in that city. For the better accommodation of their large and extended business they are erecting a new store with a warehouse which will be exceptionally complete and admirably arranged.



## Modern Enameling Plants and the Manufacture of Enameled Specialties.

BY J. VOLLKOMMER, PITTSBURGH.

In speaking of the enameling industries we generally associate with this term either the manufacture of white enameled cast iron sanitary and other hollow ware, or of enameled household articles consisting of stamped sheet metal. Yet there are large enameling concerns in Europe (and lately also in this country) doing a thriving business, not as parts of foundries or sheet metal stamping works, but independently by enameling for the trades in general and by manufacturing certain enameled specialties.

The usefulness of enamel is by no means restricted to kitchen ware and bathtubs. Its preservative qualities and intensity of coloring make it a most suitable medium for the manufacture of advertising and street signs. Enameled iron linings for refrigerators, insulated conduits for electric work, the enameling of steel wash boards, of stoves and ranges, of clock and watch dials and of hundreds of other articles keep such plants busy.

Enameling works of this character differ slightly in equipment from plants manufacturing enameled stamped ware or cast iron sanitary articles. As a rule a greater variety of enamels is required, but less quantity. Hence we find, aside of the typical tank furnaces, also one or more crucible furnaces with from four to twelve pots, which are manipulated by a pair of horizontal tongs connected by a hoist to an overhead trolley, the same way as those in glass houses.

### PREPARING THE ENAMELS.

The molten enamel is either poured into water and upon contact with the same granulated to a coarse sand, or it is cooled slowly upon slabs of cast iron or stone. In the latter case the lumps have to be crushed into small fragments before milling them. For this latter operation we generally find three different types of mills in use—namely, the ordinary buhrstone mill, for grinding in water, with oak skirting and a large bottom stone upon which on a vertical shaft several buhrstone runners on driving arms rotate; the vertical or horizontal mills for dry grinding, each with two circular mill stones incased in an iron frame with hopper and rotating at a high speed, and, as the third type, the porcelain lined pulverizing cylinders, for either wet or dry grinding. The charge is fed into the porcelain lined cylinder, which contains a number of flint pebbles, and the rotary motion grinds the enamel between the flint stones and the lining of the cylinder. The crushers employed are usually of the rotary type.

The raw materials for enamels used in sign work are the same as those described in a former article in connection with the manufacture of enameled stamped ware; but owing to a comparatively greater amount of fluxes they melt at lower temperatures. Although their composition varies they all contain a rather high percentage of borax and alkalies in the form of soda, &c., and frequently oxide of lead in the form of litharge, or red lead (minium). The latter imparts to enamel colors a peculiar luster, besides which it also acts as a flux. The use of white lead, especially as a cheap substitute for the more expensive oxide of tin, is not permissible on account of the danger of lead poisoning connected with it for those handling such enamels.

### TOOLS AND MATERIALS.

Enamels intended for dry application are fused in pots and cast on slabs to cool slowly, thus retaining a greater elasticity. They are then broken to pieces. After thoroughly cleaning these lumps they pass through a crusher and then through mills with a bolting attachment containing about 2000 meshes to the square inch. The resulting enamel powder is washed in a weak solution of muriatic acid until the last traces of foreign matter, especially that of a metallic origin, have disappeared and the solution remains perfectly clear and transparent. It should then be dried slowly

in flat wooden or enameled vessels and kept ready for use.

The necessary machine tools for sign work are few. A power shear for cutting plates up to  $\frac{1}{4}$  inch thick, shears—probably of the roller or rotary pattern—for circular or curved cuts, a stamping press, lathe and blacksmith tools comprise the entire outfit. The most suitable material for signs is a high grade charcoal sheet iron, and next to it cold rolled open hearth steel plates or sheets. The thickness of the metal is proportional to the size of the sign and varies between No. 7 and No. 16 U. S. gauge.

### ANNEALING.

After cutting the plates to the desired size and form they are dipped into a solution of equal parts of muriatic acid and water and then placed in the annealing furnace to be gradually heated until of a dark red color, when they are removed to make room for a second lot. After cooling slowly, the scaly oxide covering the surface is removed by brushing and scraping and the plate is straightened, punched—if holes are desired—and slightly raised in the center. For this last operation on large numbers of plates of the same size cast iron forms will be found convenient. A slightly convex surface prevents signs from warping and imparts to them a plastic appearance.

Since the substitution of open hearth and Bessemer steel sheets for wrought iron plates many an enameler has experienced great trouble in obtaining unblemished enameled surfaces. Streaks of a dull roughness and groups of blisters appear at various places. At others the enamel chips or cracks after cooling. The cause of such irregularities is often wrongly ascribed to the composition of the enamel, to imperfect pickling or to a bad muffle furnace; whereas the fault frequently lies in the difference in the structure of sheet steel from wrought iron. The surface of the steel often contains impurities which the ordinary processes of pickling do not always remove. Minute cavities filled with gaseous matter expand during the process of firing, while the escaping gas bubbles force their way to the semi-liquid enameled surface, forming either blisters or, by bursting, a rough crust. To overcome such difficulties the following treatment of faulty steel plates has given good results in some German enameling works: Dip the plates into a solution of 1 part of calcic chloride to 2 or 3 parts of water and then, while yet wet, place them in an airtight annealing furnace for one hour or longer. Or dip the articles into the same solution, then dust over their wet surface pulverized sulphur and anneal them in an airtight case in an ordinary furnace, or, without casing, in a tight closing annealing furnace, until uniformly dark red. In either case the fumes of the evaporating chemicals destroy the surface of the steel, thus permitting the escape of any gases beneath. The roughened surfaces of the steel plates now form an excellent recipient for the enamel.

### PICKLING.

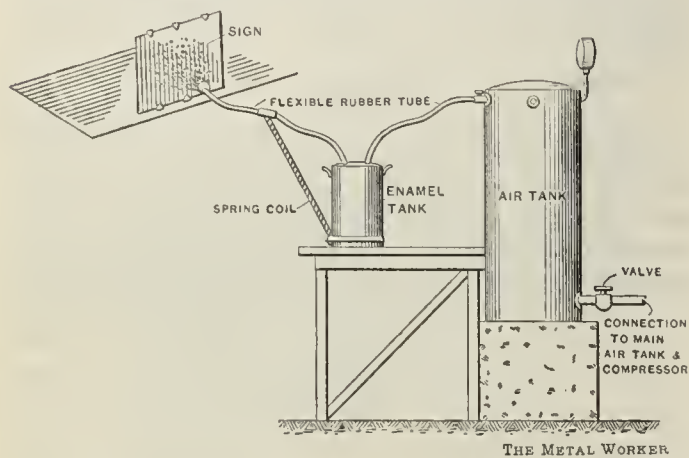
To insure a perfect surface for the reception of the enamel the plates are now pickled. The following two methods are among those to be found in present use: Submerge the articles in a bath of 20 parts of water with 1 part of sulphuric acid for about 12 hours and then rinse in clear water and scrub them clean. Or, use a solution consisting of 20 parts of water, 3 parts of nitric and 1 part of sulphuric acid. In mixing, pour each acid into the water slowly and in successive order; never both at the same time, since an explosion might be the result. After an exposure of from 20 to 40 minutes remove the plates from the pickling tank, clean their surface thoroughly, and dip them into boiling water containing a weak solution of soda, to remove the last traces of acid. The plates are now ready for the first coat of enamel.

### ENAMELING.

Signs are enameled either by applying the enamel in a liquid form (wet process) or by dusting the finely ground enamel powder over their surface (dry process). The first method has been described at length in a previous article. It consists in dipping the slightly moistened metal plates into a vessel containing liquid enamel.



Tongs of spring steel having three arms with saw-tooth ends are used to hold the plates firmly during this operation. To large signs the enamel is also applied by pouring it over their surface while in an inclined position or by brush and lately by pneumatic spray. The brushes used for this purpose are similar to broad paint brushes and of long and fine hair. Care must be taken to brush the enamel evenly and in one direction only. The spray or vaporizing apparatus shown in Fig. 1 consists of a



Modern Enameling Plants.—Fig. 1.—Enamel Spray.

cylinder or drum connected with an air compressor, or charged with a certain amount of highly compressed air. By means of rubber tubing this air is forced into one or more large vessels containing liquid enamel. A second tube from the same vessel sprays the enamel over the desired article. It is directed by hand and has at its end an adjustable nozzle. The air drum is fitted with a valve indicating the pressure and with means of regulating the same at will. The air pressure varies according to the size and construction of the spray and the consistency of the enamel.

#### DRYING ROOM.

The newly coated, moist steel plates are now placed in the drying room, where owing to a temperature of about 160 degrees all moisture soon evaporates. In conveying them care should be taken that the surface containing the fresh enamel should not come in contact with

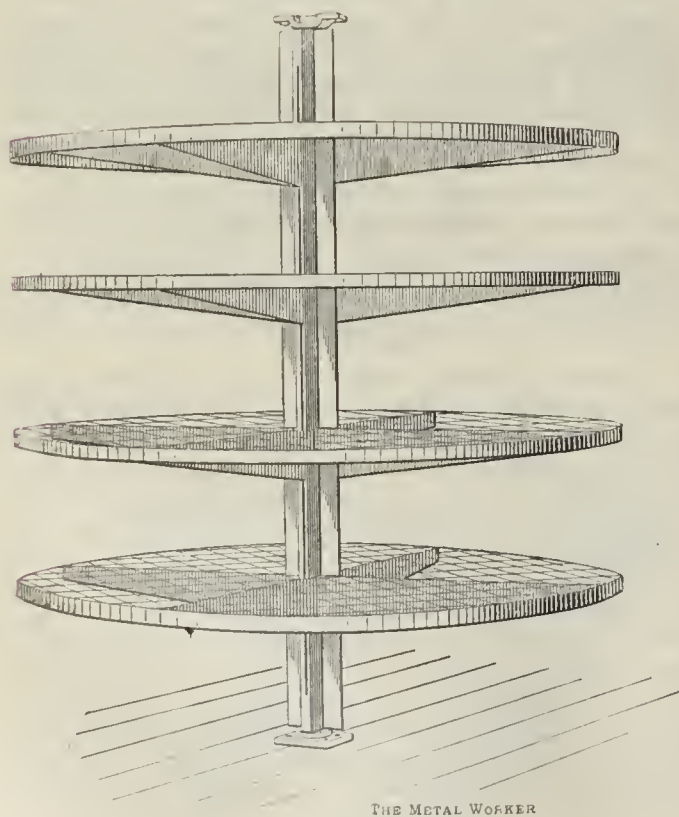


Fig. 2.—Circular Drying Shelf.

anything except the supports upon which they rest. In contrast with the old construction of only stationary shelves along the sides and across the chamber, drying rooms with fixed and rotary shelves at present find

much favor. These latter consist of a number of shelves fastened radially above each other to a vertical center-shaft with pivot bearings, revolving at the slightest touch. These several shelves may be of circular form, as shown in Fig. 2, or square or of any polygonal form. They are laden with ware by turning the rack. Considerable room can be saved by placing these racks in rows in the middle of the drying room, extending through its entire length, one opposite to each door, thus leaving the entire floor space available for heating surface. The corners and the spaces between the doors can be utilized for stationary shelves. Rotary racks permit an easy and rapid inspection of the ware without handling it.

A sketch and detailed description of muffle furnaces, similar to those in use for sign work, has been given in



Fig. 3.—Tee Iron Stand.

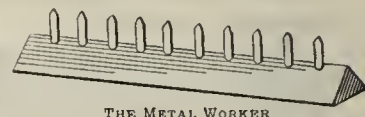


Fig. 4.—Cast Iron Stand with Steel Points.

a former number of this paper. The grades and carriages (forks) employed to serve the muffles are of the same type as those used in the manufacture of kitchen ware, while in the muffle the signs rest on the sharp edges or points of stands, having, however, as little con-

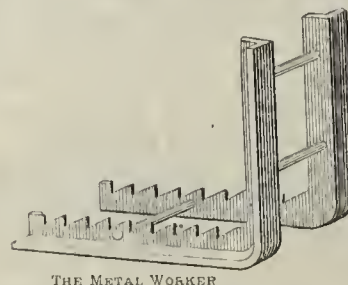


Fig. 5.—Angle Iron Stand for Plates Enamelled on Both Sides.

tact as possible with them. Examples of these stands are shown in Figs. 3, 4 and 5 of the accompanying illustration.

#### STENCILING.

The enamel intended for the last coat should possess some adhesive qualities. Therefore dissolved gum arabic or some other vegetable sticky substance is added. The lettering on ordinary signs is produced by means of stencils. Blue signs with white (sunk) letters are made by applying the last (blue) coat on top of the previously burned second (white) coat. As soon as the latter is dry a stencil, on which the lettering and other matter to appear afterward in white has been cut out, is fastened securely by means of clamps and frame over the sign and then brushed out until only the white second coat remains visible through the perforations of the stencil. The latter is now removed and the sign retouched—that is, the stays between the letters and other superfluous enamel is scraped away with sharp pointed sticks of box wood. The same principle applies to white signs with blue raised letters, excepting that a stencil of the opposite character (positive stencil) is used. That is, lettering and ornamentation remain, but everything adjoining is removed, leaving only sufficient material for the stays or strips uniting the letters with the balance of the sign. A less expensive sign, also containing dark blue sunk letters on a white ground, is made by applying on top of a dark blue ground a very opaque white, which is brushed out, using an ordinary stencil, the same as on a blue sign with white lettering.

A method much in use in German factories consists in writing, either by hand or stencil, upon the properly enameled background with a mixture of lard, beeswax and copal or some other lacquer. The entire surface is then coated with enamel and the sign placed in a special muffle exposed to a considerable heat, but below fusing temperature. As a result all enamel adhering to the



prepared surface will break away, exposing the lettering. After some retouching the sign is ready for its final fire. In stenciling signs hand work can be partly superseded by using rotary brushes driven by compressed air. The signs are placed on revolving stands and the brushes guided by hand.

STENCILS.

The best and least expensive material for stencils is a tough, flexible paper of the type of the heavier and better grades of yellow drawing papers. Its surface must not get rough, show fibrous fringes, or peel off on account of the friction produced by rubbing. To insure durability and resistance against moisture this paper is treated with a solution of beeswax in hot turpentine; or, better, varnished with shellac dissolved in alcohol. The letters must be cut sharp and exact. The stays connecting them should be judiciously distributed so as to prevent the several parts of the stencil from tearing without, however, making them too prominent and thus necessitating more retouching on the sign. In special cases stencils of thin brass sheets and occasionally of heavy tin foil or sheet lead are employed. Where many stencils of the same kind are required blue printing is resorted to. The original sketch is made in black and white on semi-transparent paper and printed on suitable paper containing blue print solution. Before cutting out the lettering it receives a coat of varnish. For street signs, house numbers, and work requiring large, plain lettering, separate metal stencils for each letter or figure may be used. They are set into adjustable frames by means of slides and firmly clamped together, enabling any combination of letters or figures to be made without requiring a new stencil for each case.

POWDERED ENAMELS.

Powdered enamels are little used for ground coats on sheet steel, but more for the final operations on sign work. After sponging the surface with some adhesive matter, such as gum arabic, glue or a decoction of sea moss (*Jucus crispus*), the enamel is sifted over the metallic surface and burned in or fused as soon as it is dry. The next layers are applied in the same manner. For ordinary work the letters can be stenciled or even printed upon the surface forming their background, using a specially prepared printer's oil, some heavy, slowly evaporating varnish, or a mixture of thick oil and turpentine as a medium upon which the enamel is to be sifted. Great care must be taken to remove all superfluous enamel and to clean the signs thoroughly before firing.

A high grade sign is produced by stenciling or tracing the lettering upon the background and then applying the enamel in the following manner: Sift enamel of the desired color through a silk bolting cloth and mix the dust derived therefrom with a mixture of colophonium dissolved in turpentine until it is of a pasty condition and will just permit its application by brush. Fill in all lettering and ornamentation with this paste, and dry the sign well. It is then fired, after having been thoroughly cleaned with soft rubber, removing especially the brownish stains caused by the adhesive. The lettering on such signs projects in relief. For such work the colored enamels must be specially melted and not prepared by simply mixing the desired coloring oxide with the white enamel. Shading and hand decorations require a special fire. The prepared oxide or colored glaze and some soft flux are thoroughly mixed with thick oil (concentrated turpentine) and ground upon a glass plate to a semiliquid paste. The colors are applied in thin layers the same way as in china decorating. They are burned in at a dark red heat. For gilding, the so-called liquid gold is obtained ready prepared. Liquid silver and platinum permit other metallic effects. These preparations are carefully applied with fine long haired pencils. They are then dried and fired in muffles at a dark red heat technically known as gold fire.

VENTILATION.

Enameling shops, especially those sections where signs are stenciled or brushed out, also where pulverized enamels are applied, require a well planned system of ventilation. For this purpose a large, inclosed suction

fan of the centrifugal type can be installed, into which the several sheet metal ventilation ducts drain. Large suction inlets, preferably covered with wire screens, should be provided at various heights, and as close as possible to the places where signs are handled. These will carry off most of the injurious enamel dust and thus prevent its inhalation. The outlet containing the fan should be so constructed that the floating enamel dust is precipitated and thus can be used over again.

PRINTING AND DECALCOMANIA DECORATION.

A printing outfit will be found a very well paying investment in sign works. The printing is done by means of engraved plates of steel, copper, zinc or aluminum, or lithographic stones. There are two styles of presses in use. The press with one or two fixed rollers and sliding table, and the two-roller press, or roller printing machine. In the first case, single sheets are printed from single engraved plates. In the latter, the surface of the lower roller contains the engraving, from which endless rolls of paper are printed. A continuous jet of steam passes through this roller, to prevent the oil and color from hardening. The printing is done upon English printing paper and a special printing oil is employed for mixing the colors. For polychrome prints, each color requires a special plate.

In transferring, the prints or decalcomanias are slightly moistened, spread upon the sign, completely flattened out with rubber rollers and then varnished. Before firing they are exposed to a very low heat in a special muffle to evaporate all oil. They are finally burned at a dark red heat. The printing paper should completely incinerate without leaving any traces excepting the design. Photographs can be transferred upon enameled metal surfaces in the same manner as it is done in the ceramic industries.

The application of the sand blast or a bath in diluted hydrofluoric acid destroys the glossy surface of enameled plates. This fact is taken advantage of in the manufacture of metallic blackboards and writing tablets.

RECIPES FOR ENAMELS.

Composition of enamels for wet applications, suitable for sign work:

| Ground (Dark Blue).      |             |                                                                                                                                                                                                             |
|--------------------------|-------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                          | Parts.      |                                                                                                                                                                                                             |
| Borax .....              | 33          | To 100 parts of enamel, add 6 to 9 parts of clay at mill.                                                                                                                                                   |
| Quartz .....             | 20          |                                                                                                                                                                                                             |
| Felspar .....            | 28          |                                                                                                                                                                                                             |
| Calc spar, or chalk..... | 9           |                                                                                                                                                                                                             |
| Soda .....               | 6           |                                                                                                                                                                                                             |
| Fluorspar .....          | 3           |                                                                                                                                                                                                             |
| Saltpeter .....          | 2           |                                                                                                                                                                                                             |
| Oxide of manganese.....  | 0.5         |                                                                                                                                                                                                             |
| Oxide of cobalt....      | 0.15 to 0.2 |                                                                                                                                                                                                             |
| Ground (Whitish).        |             |                                                                                                                                                                                                             |
|                          | Parts.      |                                                                                                                                                                                                             |
| Borax .....              | 26          | To 100 parts of enamel, add at mill from 4 to 6 parts of clay.                                                                                                                                              |
| Quartz .....             | 20          |                                                                                                                                                                                                             |
| Felspar .....            | 38          |                                                                                                                                                                                                             |
| Soda .....               | 8.5         |                                                                                                                                                                                                             |
| Fluorspar .....          | 2           |                                                                                                                                                                                                             |
| Saltpeter .....          | 1           |                                                                                                                                                                                                             |
| Cryolite .....           | 6           |                                                                                                                                                                                                             |
| Bone ash.....            | 2           |                                                                                                                                                                                                             |
| White (Containing Lead). |             |                                                                                                                                                                                                             |
|                          | Parts.      |                                                                                                                                                                                                             |
| Quartz .....             | 74          | To 100 parts of enamel, add 5 parts of clay, also some carbonate of magnesia.                                                                                                                               |
| Boracic acid.....        | 55          |                                                                                                                                                                                                             |
| Felspar .....            | 123         |                                                                                                                                                                                                             |
| Red lead.....            | 11          |                                                                                                                                                                                                             |
| Soda .....               | 37          |                                                                                                                                                                                                             |
| Saltpeter .....          | 7           |                                                                                                                                                                                                             |
| Cryolite .....           | 43          |                                                                                                                                                                                                             |
| White.                   |             |                                                                                                                                                                                                             |
|                          | Parts.      |                                                                                                                                                                                                             |
| Quartz .....             | 24          | Add 1 part of carbonate of magnesia and 4 to 5 parts of white clay (kaolin or pipe clay) at mill.                                                                                                           |
| Borax .....              | 72          |                                                                                                                                                                                                             |
| Felspar .....            | 96          |                                                                                                                                                                                                             |
| Soda .....               | 36          |                                                                                                                                                                                                             |
| Saltpeter .....          | 8.5         |                                                                                                                                                                                                             |
| Cryolite .....           | 21          |                                                                                                                                                                                                             |
| Oxide of tin.....        | 42          |                                                                                                                                                                                                             |
| Blue.                    |             |                                                                                                                                                                                                             |
|                          | Parts.      |                                                                                                                                                                                                             |
| Borax .....              | 32          | To 100 parts of enamel, add 2 parts of clay, white or yellow clay, according to the desired shade of the blue. By adding a small amount of oxide of manganese or nickel, the color can be slightly changed. |
| Quartz .....             | 17          |                                                                                                                                                                                                             |
| Felspar .....            | 31          |                                                                                                                                                                                                             |
| Soda .....               | 5           |                                                                                                                                                                                                             |
| Fluorspar .....          | 8           |                                                                                                                                                                                                             |
| Saltpeter .....          | 3           |                                                                                                                                                                                                             |
| Cryolite .....           | 2           |                                                                                                                                                                                                             |
| Oxide of cobalt.....     | 2           |                                                                                                                                                                                                             |

The above few recipes are not supposed to give equally good results under all conditions. They are merely intended as a general guide to the enameler, who will modify them to suit the particular conditions existing in his shop and the composition of his raw materials.



#### ENAMELED SPECIALTIES OF COPPER, WATCH DIALS AND FACE PLATES.

The disks of the desired size are punched out of copper sheets, centered, and after drilling all small holes, turned on lathes in numbers of a dozen or more to the exact size. A slightly convex shape is given them by means of a hand press and the proper metal dies. The riveting of the metal pins and countersinking them on the face side forms the next operation. Pickling is dispensed with, provided the articles are free from dirt and grease. In fact, the natural, reddish brown coat of oxide covering the copper serves as a very good recipient for the enamel. The latter is applied as follows: Dissolve several ounces of good glue in about two quarts of water and mix and grind it with the finely pulver-

veloped very strongly, since they fade considerably in the low muffle fire to which they are exposed.

Copper letters and signs are enameled the same way as dials, but receive one coat of enamel and on one side only. The enamel paste for wet application consists of such inexpensive materials as white fluorspar, gypsum or plaster of Paris, and a small percentage of borax. A somewhat better enamel, containing some oxide of lead and considerable borax, is dusted over the wet enamel.

#### Sheet Metal Interior Decoration.

We present herewith some samples of the stamped sheet metal ceilings and side walls manufactured by the Brooklyn Metal Ceiling Company, 283-287 Greene avenue, Brooklyn, N. Y. The company have been engaged for some time in the manufacture and perfection of stamped sheet steel for interior decoration and have achieved a marked success in this field. The examples

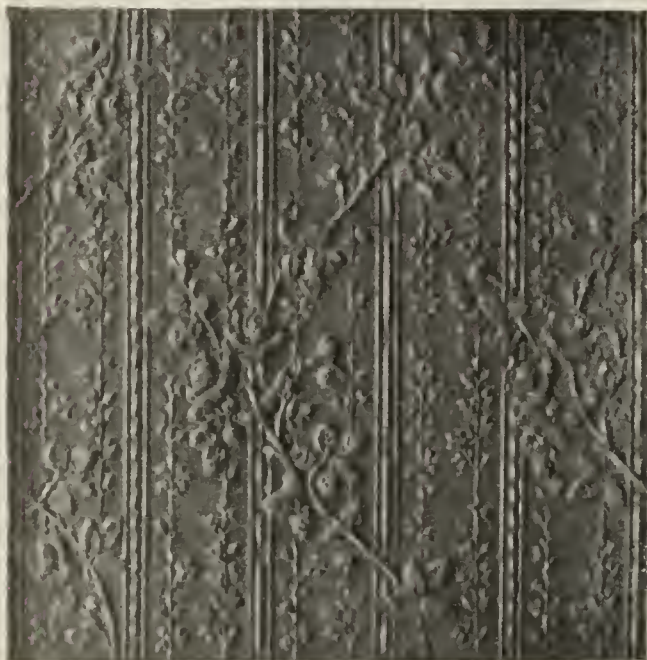


Fig. 1.—Side Wall Plate, Diaper Design.



Fig. 2.—Ceiling Panel, Grape Vine Pattern.

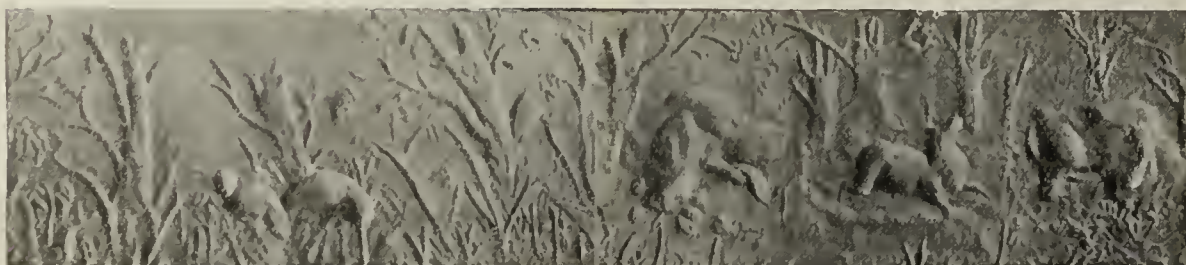


Fig. 3.—A Frieze, Animal Life.

#### SHEET METAL INTERIOR DECORATION.

ized enamel powder until the mass has the consistency of thick syrup. Brush this paste on the copper disks and sift pure white enamel powder over the yet wet surface. The back of dials can be covered with a coat of inferior enamel, for which purpose remnants and spoiled melts can be utilized. It is not powdered over with dry enamel.

For burning, the disks are placed upon narrow, slatted, iron grates, coated on top with pipe clay or slaked lime to prevent the melting enamel from sticking. After an exposure to the muffle heat of from two to three minutes the enamel should have fused and formed a smooth, glossy surface. The articles are now removed to make room for the next lot. The dial plates thus enameled should be carefully inspected and all blisters and impurities removed by grinding them off or by filing. The second coat of enamel is now applied to the face side in the same way and burned. Enamel for face plates and dial work should fuse at about 1600 degrees F., or 870 to 900 degrees C. The printing on the dial faces is done by means of lithographs, which are transferred and burned in the usual manner. Photographs for transferring purposes must be de-

given herewith afford a good idea of the class of work that is being done by this concern, and also of the ornamental possibilities offered by their products. In Fig. 1 is shown a side wall plate of diaper design. These sheets are made 23 inches wide and 5, 6, 7, 8 and 9 feet long. They form extremely attractive and artistic wall coverings for almost any class of buildings. The ceiling panel given in Fig. 2 is of grape vine pattern, peculiarly adapted for dining rooms or places of public refreshment. These plates are made 19 inches square. An unusually attractive design is shown in Fig. 3, which represents an artistic frieze 11 inches wide stamped with a realistic scene of animal life in the forest. The manufacturers report that they have a large and increasing demand for their goods in this line.

BERTSCH & Co., Cambridge City, Ind., manufacturers of Shears, Punches and Bending Rolls, contemplate the removal of their plant to some other location, their present facilities having become entirely inadequate to accommodate their growing business. Although several propositions are under consideration the company have as yet made no decision as to their future location.



## The Empire Iron & Steel Company.

The product of the new plant of the Empire Iron & Steel Company, at Niles, Ohio, will be sheet steel and angles for light structural work. The plant will contain six hot mills, two cold mills and a three-high 24-inch bar mill. Iron and steel sheets will be made up to 60 inches wide and from 16 to 30 gauge. Specialties will be guaranteed double refined iron sheets, range steel and Bow-socket polished sheets. The output of iron and steel angles will be about 100 tons per day, and for the present the heaviest angles the company will roll will be 4 x 4 inch. They expect to start their plant about October 1, but the galvanizing plant, which is being erected, will not be ready for operation before about January 1. The company have effected an organization by electing Wade A. Taylor president and treasurer, Charles S. Thomas, vice-president and manager, and J. F. O'Dea, secretary.

## "M. F." Brand Tin Roofing.

An interesting discussion recently arose as to the origin of the "M. F." brand of roofing tin, which is being put on the market by the American Tin Plate Company, and of which W. C. Cronmeyer, Carnegie Building, Pittsburgh, is special agent. The supposition was that the letters "M. F." stood for "Most Favored," but in order to remove any doubt in the matter Mr. Cronmeyer addressed a letter to Margam & Mansel Tin Plate Works, Port Talbot, Glamorganshire, England, making inquiries as to the origin of this brand. In reply Mr. Cronmeyer received a letter from Sydney H. Byass, a copy of which we have been able to secure and which reads as follows:

"In reply to your favor of the 17th inst., I thank you for sending me one of your new booklets, and with regard to the origin of the letters 'M. F.' I do not think that any of the theories which have been advanced to you are correct, but as a matter of fact the letters stand for 'Margam Forge.' I have not been able to absolutely make certain that this is the case, but it is more than probable that this is the correct solution, as at these works the brand was first made, and in fact was made here until four or five years ago, when the works were dismantled. They are still known by the name of 'M. F.' among the old workmen."

The process under which the "M. F." brand of roofing tin is made has proved to be successful in producing a roofing tin of lasting qualities. Since being acquired by the American Tin Plate Company the process has been considerably improved. We may state that the U. S. Eagle brand of roofing tin, made by the United States Iron & Tin Plate Company in this country years ago, was made by the same process as the "M. F." brand. The main improvement in the process made by the American Tin Plate Company was in giving the plates a bath in oily substances horizontally instead of vertically. By this process the common fault of allowing a large part of the coating to adhere to the lower edge of the plate when it is removed vertically from the tinning pot is overcome and the coating is distributed evenly over the entire surface of the sheet.

## A Brass Catalogue.

We have received from the Waterbury Brass Company, 122 to 130 Centre street, New York, a copy of a new catalogue and stock list showing what they carry in stock in their New York warehouses. It consists of a neatly prepared publication of 52 pages, well printed in two colors and illustrated with engravings of some of the goods. On the title page is presented a view of the company's large Centre street warehouse, which gives an idea of the extensive facilities possessed by the company in their new quarters. The statement is made that they have three different telephone numbers, so that if one is busy their customers can call them up on another. They also maintain a private telephone exchange in their warehouse and are in direct telephonic communication with their general offices and mills at Waterbury, Conn. Views are also given of some of the

departments of their New York branch, including the salesmen's office and a portion of the stock room. Among the goods presented are hard and soft sheet brass in rolls, spring brass, spinning copper, hoop brass, soft bronze in rolls, German silver in rolls, brass in sheets, sign brass, sheet copper, German silver and white metal, brass, copper and yellow metal rods, brazed brass tubing, seamless brass and copper tubing, cornice and roofing copper, cold rolled polished copper, soft brazier sheet copper, soldering coppers, brass and bronze moldings, copper and yellow metal nails and sheathing, together with a number of specialties in brass, including curves, stair treads, moldings, seamless brass chisel handle ferrules and screwdriver handle ferrules, sheet brass grommets, hat ventilators and brass eyelets for all purposes and also a full line of brass checks. The company state that they make a specialty of drawing and spinning brass and can supply special widths or circles in brass and copper of any diameter and any gauge. The last half of the book is given up to tables of weights and measures covering all the different products in brass and copper, and rules for finding the circumference, diameter, &c., of circles. A comprehensive index is a feature of the catalogue. The publication will be found a useful and valuable hand book by buyers of brass and copper goods.

## Course in Sheet Metal Pattern Work.

The American School of Correspondence, Boston, Mass., announce that the trade scholarships at their disposal are almost exhausted and that on September 30 the offer of these scholarship will be withdrawn. Applications for the few remaining scholarships will be considered strictly in the order received, and after September 30 students can only be enrolled at the regular tuition fee of \$50. Correspondence courses are given by the school in sheet metal pattern work; mechanical, electrical, stationary, locomotive and marine engineering; heating and ventilation; plumbing and mechanical drawing. Thorough instruction in mechanical drawing is included in each course. The opportunity presented by the American School of Correspondence for young metal workers to obtain a thorough knowledge of mechanical drawing as applied to their trade is a valuable one. The course in this subject has been prepared and is in charge of a thoroughly practical and experienced sheet metal worker.

## FLASHINGS.

It was officially announced at the headquarters of the Amalgamated Association in Pittsburgh last week that the proposition submitted by the American Tin Plate Company for the Tin Plate employees to accept a reduction in wages on Tin Plate for export had been defeated. A number of lodges that at first voted almost solidly against the proposition reconsidered their action and voted in favor of it, yet there were not enough of these to change the general result.

The Pittsburgh plant of the American Tin Plate Company, New Kensington, Pa., is reported to be still running full, but the Pennsylvania mill at the same place is idle.

J. CALLAGHAN & SON, Sheet Metal workers, advise us that they have removed to their new factory at 623 Superior street, Cleveland, Ohio, where with increased space and better facilities they will be enabled to better serve their customers in all kinds of Sheet Metal, Metal Ceiling, heating and ventilating and general repairing work. In a little dodger which the firm are distributing they call attention to the fact that they give special attention to leaky roofs of metal, slate or gravel; also to repairing gutters and down spouts. The firm state that they make anything in Sheet Metal Cornices, Skylights, Smoke Stacks, Gutters, Pipe, Tanks, Radiator Shields, &c.

The Tin mill workers at the American Tin Plate Company's Works, at Chester, W. Va., which is a non-union plant, have adopted a new scale, which increases the limit of output to 11,000 pounds per turn. The regular Amalgamated scale of wages is paid at the plant,



but by the new arrangement the men are enabled to make better wages than the men at the plants controlled by the Amalgamated Association, as the limit of output per turn is about 1 ton greater.

DAVID REESE, formerly of the Griffiths Charcoal Iron Tin Works, at Washington, Pa., has been appointed assistant superintendent of the Sheet mills of the Laughlin Nail Works, at Wheeling, W. Va.

GEORGE J. RECORD, who established in 1882 the Record Can Company at Conneaut, Ohio, since absorbed by the American Can Company, has resigned the management of the plant, and has been succeeded by C. T. Draper of the American Can Company's Cleveland branch.

F. B. REEVES will sever his relations with the Philadelphia branch of the Wheeling Corrugating Company on or about October 1 next.

THE LALANCE & GROSJEAN MFG. COMPANY of New York are making some important improvements in their rolling mill plant at Harrisburg, Pa., including the installation of motors in place of the smaller steam engines and the erection of three large gas producers and five new annealing furnaces. The entire plant, consisting of a Bar mill, three Tin mills and one Sheet mill, is in active operation.

SUIT has been brought against the American Can Company for \$15,000 damages by Kling & Andrews of Chicago Heights, Ill., who charge that they made a contract in 1898 with the Union Can Company, since absorbed by the American Can Company, to take all their Scrap Tin for three years, and that the Union Can Company, being an integral part of the American Can Company, have failed to carry out the terms of their contract.

W. H. MULLINS, Salem, Ohio, is distributing an artistic circular under the title of "The Evolution of the Boat," illustrating and describing his Stamped Metal Canoes and Boats.

THE CORTRIGHT METAL ROOFING COMPANY, 50 North Twenty-third street, Philadelphia, who justly claim to be specialists in the manufacture of Metal Shingles, after 16 years' effort in this line of practical, up to date roofing material, have issued a neat little pamphlet telling in a simple and practical manner all about the Metal Shingles. The cover of the pamphlet bears a grotesque figure suggesting a man in armor, the head, body and arms being formed of Metal Shingles. The company call particular attention to their Cortright Metal Slates and Victoria Shingles, in addition to which they make a patented Ridge Coping, also the Cortright Patent Valley, for use with their special forms of metal roofing.

THE HAMPDEN CORNICE WORKS, Springfield, Mass., have the contract for the metal work for the Richmond Estate at Woodstock, Vt. They are also doing the metal work on the Insane Asylum at Northampton, Mass.

CHINESE TIN has lately appeared upon the London market. Recent market reports state that a fair business has been done in Tin from the Province of Yunnan, China.

THE business of the Richmond Supply Company, Richmond, Va., was begun in February, 1902, to manufacture Ricimate Fire Proof Paint and Dura Elastic Roof Paint. The former is applied to wood and all combustible material and the latter to tin, corrugated iron and also to galvanized iron. Both are referred to as having the highest qualities to resist atmospheric injury and to prevent inflammability or progress of fires where they may be started.

T. S. CASEY, Marquette Building, Chicago, has been appointed agent for the sale of Pipe, Sheets and Plates manufactured by the Wheeling Steel & Iron Company, Wheeling, W. Va., covering the States of Illinois, Indiana, Wisconsin, Minnesota, Iowa, Nebraska, Kansas and Colorado.

THE KIEHL IRON WORKS, Algiers, La., recently incorporated with a capital stock of \$5000, have a completely

equipped plant for doing all kinds of Sheet Iron, Tin, Galvanized and Copper work. They will make a specialty of fuel oil tanks. The incorporators are Charles I. Kiehl, Floyd W. Morgan, and Arthur and Frank C. Duvic.

WORK has just begun in the Muncie (Ind.) plant of the American Sheet Steel Company on the installation of two new sets of cold rolls, which will largely increase the capacity of the mill. The concentration of all the pumps into one pump house has also been accomplished, resulting in an effective increase of power. The battery of boilers, which was a detriment by being too near the furnaces, making it impossible for the men to work in hot weather, has been dismantled. Many other general changes for the better have been made about the plant, the company having expended \$25,000 in the way of improvements during the past four months.

THE hot mills of the American Tin Plate Company that are idle are the Shenango and Greer mills at New Castle, Pa.; the La Belle, Wheeling, W. Va.; Anderson, Ind.; Gas City, Ind.; Connellsville, Va.; Elwood, Ind.; Pennsylvania Works, New Kensington, Pa.; Muskegon, Mich.; Lisbon, Ohio; Canonsburg, Pa.; Irondale, Ohio; Atlanta, Ind. The Laughlin plant at Martin's Ferry, Ohio, is in partial operation.

THE plant of the Sharon Tin Plate Company, at Sharon, Pa., which has been idle for several weeks, resumed partial operations on Tuesday, September 2. Ten of the 20 hot mills in the plant started up and the other ten will be started in a short time.

THE AMERICAN STEEL ROOFING COMPANY, Middletown, Ohio, are calling attention to their Polygon Conductor Pipe, which they claim is not only more durable, handsome and strong than other kinds of Pipe, but also has the advantage of obviating the trouble often met with in Conductor Pipe from expansion and the bursting of ice formed in it.

### International Fire Exhibition.

The British Fire Prevention Committee, an official body whose headquarters are at 1 Waterloo Place, London, S. W., have arranged to hold, from May to October, 1903, at Earl's Court, near London, an international exhibition of fire extinguishing and life saving appliances. Recognizing the soundness of the maxim that "prevention is better than cure," the promoters of the exhibition intend to give special prominence to the subject of fire prevention in methods of building construction and equipment. The exhibition is to be divided into various sections covering the whole subject of fire prevention. Section 6 will be devoted to Water Supply, under the sub-heads of Water Works, Reservoirs, Water Works Installations and Machinery, Private Water Supply, Fittings, Hydrants for Street and House Use, Pipes, Stop Cocks, &c. A series of diplomas and medals will be awarded to successful exhibitors in the different classes. Floor space will be provided at the rate of about \$1 per square foot, and exhibitors will incur no further expense beyond the transportation of their exhibits and the equipment of their stand. The undertaking will be under the management of the London Exhibitions, Limited, Earl's Court. The exhibition buildings which exist there are said to be admirably fitted up with regard both to decoration and sanitary arrangements. Foreign exhibits are solicited. No duty will be payable on such exhibits entering England, while special advantages will be granted by shipping and railroad companies to facilitate the transportation of foreign exhibits. Information in regard to space, &c., will be supplied on application to the secretary the British Fire Prevention Committee, 1 Waterloo Place, London, S. W.

The announcement is made that Alexander C. Humphreys has definitely accepted the presidency of the Stevens Institute at Hoboken, N. J. Mr. Humphreys was graduated from the institute, and has been for years one of the leading gas engineers of this country and of England.



## HEATING SWIMMING POOLS.

BY S. W. M.

The increase in the number of buildings in which a swimming pool is a feature is bringing to many heating contractors throughout the country the problem of heating a large quantity of water and the provision of a suitable plant for the work. In the past the magnitude of the requirements has not been thoroughly understood, and as a result the contractor in many instances has suffered no inconsiderable annoyance and frequently some loss. Even when those called upon to equip such pools with suitable heating apparatus have been willing to employ a consulting engineer to aid them in the work they often have been unable to find a suitable person or they have found the conclusions of different authorities somewhat at variance. In all engineering calculations common sense can be used with advantage, especially where there is no experience on which to form a judgment. The same commodity can be used with equal advantage in considering the basis for the calculations and the application of the calculations for heating swimming pools.

In order to give some assistance to those who are interested in this problem we give the dimensions of a swimming pool and the method of arriving at the size of boiler needed for the work of heating it, used by an engineer who has written the specifications for equipping a number of these institutions. Assuming that the pool is 20 feet wide and 35 feet long, to have water 6 feet deep at one end and 3 feet deep at the other, it will be readily seen that the average depth is  $4\frac{1}{2}$  feet. By multiplying 35 by 20 and then by  $4\frac{1}{2}$  it will be seen that the pool will have 3150 cubic feet of water. By multiplying this by 62 $\frac{1}{2}$ , the number of pounds of water in a cubic foot, it will be seen that there are 196,875 pounds of water. If this water is to be taken directly from the street mains the temperature will vary with the time of year and the depth of the mains below the surface of the ground. Assuming that it was 40 degrees and that it was desired to raise the temperature of the water to 80 degrees, it will be seen that another little calculation is necessary.

A heat unit is the amount of heat required to raise 1 pound of water one degree. It would require 40 heat units to raise 1 pound of water 40 degrees; consequently, 196,875 pounds of water in the pool must be multiplied by 40 to know the number of heat units required to heat the water, when it will be found that 7,875,000 heat units will be required. This much of the calculation is reasonably reliable, and room for the use of some common sense comes in the calculations that remain to be completed. High grade coals burned under perfect combustion liberate about 14,000 heat units; but when this same fuel is burned in the ordinary steam or hot water boiler a considerable amount goes to waste in the form of unconsumed gases and coal, which pass to the ash pit with the ashes in more or less volume, according to the intelligence of the fireman. In consequence, it is the common custom to calculate that from each pound of coal about 7000 heat units will be utilized. By dividing the 7,875,000 heat units by 7000 it will be seen that 1125 pounds of coal will be required to heat this amount of water in one hour's time. Ordinarily more time is given, however, because few institutions will be willing to make the outlay for the boilers necessary to heat such a pool in one hour's time. If six hours are allowed it is only necessary to divide the 1125 pounds of coal by six to find that but 187 pounds of coal per hour would be necessary.

The class of boilers adapted for such work and the chimneys to which they are ordinarily connected are not capable of burning much more than about 6 pounds of coal per square foot of grate surface, so that by dividing the 187 pounds of coal by six it will be found that boilers having 31 square feet of grate surface will be required to heat the water. If boilers of the vertical sectional type are used two boilers having grates 42 inches by something over 4 feet would be required. For the work by this calculation it will be found that more boiler capacity is determined upon as necessary than is ordinarily provided for such work. As indicated

at the beginning of this article the heating contractor and his customer in far too many instances have suffered inconvenience and sometimes loss, owing to insufficient capacity. Should the contractor have his work passed and secure his money the customer will be the loser, as he will be called upon to fire the boilers harder and burn more fuel, making a continual expense, than would be necessary if boiler capacity such as is arrived at by above calculation had been provided.

However, as has been pointed out, the amount of heat derived from the coals, the ability of the boiler to submit the heat generated in it economically, and the intelligence of the fireman, all have a very important influence on work of this kind, and if the contractor can secure the price of an ample plant it will be better to provide ample capacity rather than a plant having a scant capacity. It is claimed by those who have had experience that the grate surface required will vary very little, whether the water is to be heated by means of steam or by circulating the water through the boiler by means of large pipes. It is further claimed that when the water from the swimming pool is circulated directly through the pool it is better to use pipes of a sufficient size to allow the water to flow freely and prevent it becoming highly heated, rather than to use smaller pipes and heat the water to a higher temperature when it is possible that a disagreeable hot current may be experienced in some parts of it. If large pipes are used it is claimed that all parts of the tank will be heated satisfactorily without running a perforated distributing pipe along the sides of the tank, so that the hot water will enter the tank at various points.

## Nationalization Plan for Journeymen Plumbers' Union.

One of the most important actions taken at the recent annual convention of the United Association of Plumbers, Gas Fitters and Steam Fitters' Helpers in Omaha, Neb., was the adoption of a nationalization plan recommended by the Executive Committee of the union. The various local unions under this plan will pay to the national organization such funds as may be required, a strict account being kept of the transactions. At the end of the year a balance will be struck and the unions which have contributed more than the average will be repaid, while those whose contributions to the general expenses of the association have not been as much as the average will be required to pay the difference. This plan, which was adopted unanimously by the convention, will not go into effect until next year. The convention has referred the matter, with its approval, to a referendum vote of all the members of the union. The vote will be taken by the 350 affiliated unions on October 27, and the final adoption of the plan will depend upon the result of this vote. It is understood, however, that the attitude of the journeymen plumbers is such as to insure the approval of the plan.

The plan is somewhat of a departure in American unions, although it has been in effect to a great extent in the German unions, and was brought from that country with slight modifications by the Cigar Makers' Union, by which it has been operated with more or less success for several years. The plumbers' plan is a slight modification of that of the cigar makers. There is provided a death benefit of \$100, a sick benefit of \$5 per week for a term of 13 weeks and a strike benefit of \$5 per week for 16 weeks, after which the benefit drops to \$3. The most radical feature is an old age pension of \$500. This is paid to a member of the union who after having carried membership in the union for 25 years becomes incompetent by reason of old age.

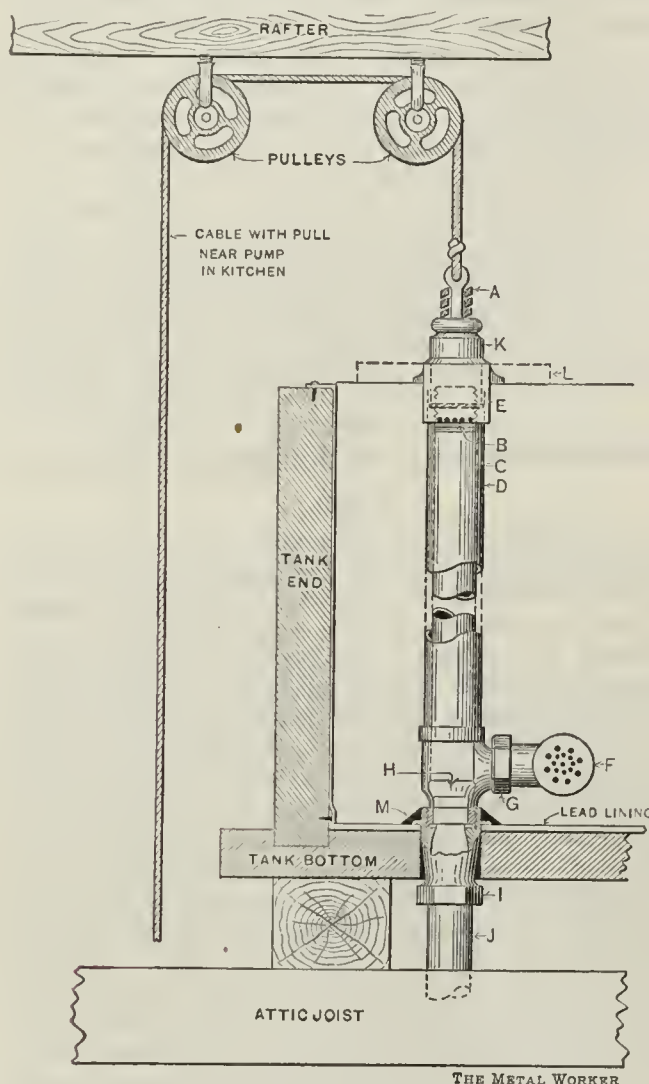
W. R. YOUNG, a master plumber of Kansas City, Mo., has filed a petition in the Circuit Court, declaring the local Master Plumbers' Association to be a "trust," operating in violation of the Missouri Anti-Trust law. He alleges that his business has been seriously damaged by members of the association, who have refused to sell him supplies because he was not a member. He asks \$30,000 damages.



## A NEW USE FOR STANDING WASTE FITTINGS.

BY HELMAR.

In the accompanying sketch is shown the application of standing bath waste fittings to the service usually obtained from cistern valves. The fittings are easily adapted and accomplish the purpose of a cistern valve most admirably. When once properly fitted they are positive and serve the purpose more perfectly than any regular stock article in the market. The reference letters on the sketch are: A, bar lead weight coiled around the lifting stem, not always necessary except in very shallow tanks; B, overflow holes in stand pipe—these supply air to drain the line when water is off; C, standing waste or overflow pipe to which cable is attached—always kept off seat by hooking the cable down when water is on; D, rigid water tight casing of the fit-



*A New Use for Standing Waste Fittings.*

ting; E, cast top piece of casing—acts as a guide for the standing pipe C; F, strainer; G, collar holding tub waste piece into bottom fittings; H, gasket ring of waste, seated in bottom fitting; I, brass tail piece passing through bottom of tank—specially made; J, house service pipe; K, top piece of standing waste pipe; L, board, through which passes the top of waste fitting to hold it steady; M, wiped flange, joining tail piece to lining of tank.

The only difference of much consequence between the regular bath standing overflow and connected waste and that for use in a house tank is that the pipes C and D must always be long enough to reach above the top of the tank. If the tank is 2 feet or less in depth no change is necessary in the fitting proper. The writer always taps the top of piece K and screws in an eye bolt to attach the cable to. The stem of the bolt is a good place to coil enough weight to overbalance the cable. Overflow holes B are too low in the regular fitting unless the tank is very shallow. They can be stopped and a hole drilled in the top of piece K instead. The waste connecting piece F, as used on a tub, is longer than necessary for tank use. It should be sawed off short or a strainer fitted in the collar G instead. The

tail piece I, shown in the sketch, is somewhat like a female solder nipple inverted, except that it has a flange near the upper end and is threaded down to a washer shoulder inside. The bottom end of the standing waste screws down in it and seats on a washer, this special piece taking the place of the regular tail piece and collar.

The first time the writer used one of these waste fittings in an attic tank he made all the changes on the job himself. The service was lead and was brought through and flanged on the tank lining first. Then, with the end of the service projecting far enough for the solder to "take" on it the collar of the bottom piece was wiped down, thus joining the collar, tank lining and service at the same time. Then, with a good washer in the tail piece (collar) the fitting was screwed down water tight. The top piece E has a flange and long screw to adjust the bight. If the tank is to have a cover the brace L can be placed flush with the top of the tank and the flange of E run down on it. The guide pin on piece K, as used on a bathtub, must be cut off so that the pipe will rise and fall freely by using the cable.

The cable may end at any point desired. It should have a ring on the end to hook over a catch on the wall when pulled down to open the valve. A second catch should be placed above the first to hold the ring when the water is off. If the house is tall and there are several pulleys, making an indirect course to the lower end of the cable, it is best to clamp a counterweight to the cable itself, some distance above the eye bolt. This will keep the cable taut so that it will not jump off the pulleys when the strain of holding the waste up is off. If a shop decides to use these fittings in place of cistern valves, it is best to get some tail pieces made on the order of the one shown in the sketch. The fittings complete can be ordered any length and with strainer in collar G instead of the whole connecting piece F.

The advantages of the use of this fitting are that it makes a better job than is possible with the regular valve; there is no need of wiping in an air pipe below the valve connection and carrying it up and over the tank, the overflow holes or a hole in top of K admit air every time and drain the line dry from above the level of the tank bottom, which is impossible with the regular valve; the strainer comes far enough above the bottom of the tank to keep out of the way of sediment, and should it ever be necessary to put a new washer on the valve it can be done without emptying the tank.

## Walker and Crawford Boilers.

The Walker & Pratt Mfg. Company, Boston, Mass., have issued an illustrated circular calling attention to their Walker and Crawford boilers for steam or water heating. The Walker boiler, as previously described in these columns, is of the vertical section type and is made in four sizes. The New Walker boiler is of the same type and is made in 17 sizes to meet the demand for a boiler of large capacity. It is supplied with a fire box of extra depth, having the combustion chamber well arched at a good height above the fire. The flues are easily cleaned from the front. The sections of this boiler are connected by the use of malleable iron, copper coated, tapered push nipples. The drums formerly used in sectional boilers are not required with this construction; the boiler therefore occupies less space and may be placed close beside a wall or pier when necessary to save space. The Crawford is a round boiler having as a new feature extended surfaces or heat ribs in the fire pot, increasing the power of the boiler and saving coal. It is entirely water jacketed, and has no flue covering plates to warp and burn out or radiate heat in the cellar. It is made in four sizes.

THE contract for the plumbing, heating, mantels, tiles and marble work in the new Lincoln apartment house in Youngstown, Ohio, and for the plumbing and heating of the new Wood Street apartment house in the same city, have been let to the Stambaugh-Thompson Company of Youngstown.



## EASTERN TRADE GOLF ASSOCIATION TOURNAMENT.

Secretary H. A. Smith of the Eastern Trade Golf Association has sent out from his office, 1123 Broadway, New York, the following letter announcing the arrangement for the fall tournament, to take place next week under the auspices of the association:

'Captain Molby asks me to announce that the governors of the Fox Hills Golf Club, Staten Island, have kindly offered us the use of their grounds, free of greens fees, for September 11. It has accordingly been decided to hold the fall tournament at that time and place.

"Players must leave New York on the 9 a.m. Staten Island ferry. The captain and committee will meet the players at St. George, Staten Island. Any members who may be late in arriving at St. George will take the Staten Island Rapid Transit Road to Clifton, where omnibuses will be waiting.

"An 18-hole qualifying game will be played in the morning, to determine the classes into which the players will be divided for the afternoon play.

"In the afternoon the players will be classed in groups of four and will play 18 holes, medal play. This distri-



Eastern Trade Golf Association Tournament.—"The Metal Worker" Cup.

bution of the classes gives every player every chance for a prize.

"The prizes thus far provided are the Club Challenge Cup for the winner in the first class; the Pierce, Butler & Pierce Mfg. Company Cup for winner in second class; *The Plumbers' Trade Journal* Cup for winner in third class; *The Metal Worker* Cup for winner of fourth class or runner up in first class, as may be determined by the governors; *Domestic Engineering* Cup for winner in the driving contest, unless otherwise arranged by the governors, and *Engineering Review* Cup for best medal play for 36 holes. Several other prizes will be forthcoming."

Since the meeting of the Eastern Trade Golf Association on August 15, the following new members have been elected:

H. C. Adams, the Manufacturers' Credit Association, New York.

J. A. Goodrich, the Judson A. Goodrich Company, New York.

C. J. Hills, the Haydenville Company, Haydenville, Mass.

F. S. Hanley, Association of Manufacturers and Jobbers in Plumbing Supplies, New York.

C. V. Kellogg, Federal Boiler & Supply Company, New York.

T. G. Knight, the Thomas G. Knight Company, Brooklyn, N. Y.

L. P. Paul, Frank C. McLain, New York.

W. S. Reins, W. L. Rogers and G. F. Ross, Central Foundry Company, New York.

C. K. Sanborn, the Haydenville Company, New York.  
P. H. Seward, Model Heating Company, New York.  
F. H. Simmons and H. S. Walton, the John Simmons Company, New York.

This makes a total membership of 60 to date.

## The Glauber Company's New Factory.

The Glauber Brothers Mfg. Company, Cleveland, Ohio, have recently acquired a well located piece of property in the eastern district of that city, on which they intend to erect one of the best equipped and most thoroughly modern brass factories in the United States. For a long time they have been considerably handicapped for lack of floor space in their different departments, and on a number of occasions have been obliged to make additions to their present factory, but their continued rapidly growing business has now compelled them to seek new quarters for the purpose of insuring sufficient facilities to meet their increasing demands.

The company will erect several buildings. The main structure, which will contain the different machines for finishing brass goods, together with assembling rooms, shipping rooms, &c., will be 150 x 300 feet. The foundry will be provided with an entirely separate building, 80 x 150 feet, which will be strictly fire proof and built of pressed brick, stone and iron. It will be fitted with Luxfer prism glass skylights, which will make it one of the best lighted foundries in the country. It will also be one of the best ventilated. The roof will be carried on steel trusses, so that not a single post will obstruct the floor of the foundry. Considerable time and thought have been devoted to every detail so as to make the arrangements for handling goods complete in every respect. All departments will be on the ground floor, thus avoiding the loss of time required by the use of elevators if upper stories were used. The company expect to be located in their new plant about December 1 and will then be pleased to have their friends and customers call to inspect it.

## Ideal Boilers.

The American Radiator Company, Chicago, have issued an exceedingly attractive 48-page catalogue, which treats mainly of their Ideal boilers, but also gives much information relative to radiators. This catalogue is bound in heavy paper covers, ornamented with four-leaved clovers embossed on the front. The foreword in this catalogue calls attention to the excellence of design, high finish, superior quality and unrivaled assortment of American radiators. Illustrations are given of the seven different plants of the company in which these radiators are produced. From radiators an easy transition is made to boilers, and attention is called to the fact that in each type of Ideal boiler every line has been laid and stands for one purpose—efficiency. The proportion or ratio between areas of grates, heating surface, flues, water ways, water capacity and connections has been made as perfect as mechanical practice admits. Every feature has been carefully developed by a group of inventors, designers and mechanical experts, whose experiences and ripest ideas are solely devoted to the advancement of the company's products. The 12 pages following are devoted to illustrations of the various types of American radiators, comprising all varieties and styles. These are accompanied by tables giving price-lists and measurements. The remainder of the catalogue is almost wholly devoted to illustrations and details relative to steam and hot water boilers. The boilers shown comprise the Ideal sectional steam boilers in four sizes, the Ideal sectional water boilers in four sizes, the Ideal Premier boilers for steam and water, shown in perspective and in section; the Ideal portable steam and water boilers, in perspective and in section; the Ideal Invincible and Junior boilers; the Ideal water boilers or tank heaters, and the Acme fire box boilers. Price-lists, measurements and other details fill several pages. A complete telegraph code completes the contents.



### The Williams Pump.

The Williams Pump Company, 404 South Senate avenue, Indianapolis, Ind., are offering the pump shown in the accompanying cut, Fig. 1 of which represents the pump ready to pull out for repairs, Fig. 2 showing it in the act of lifting water. The barrel of the pump is 3 inches in diameter, made of steel boiler tubing, and being of uniform size requires no cylinder, as the entire stock acts as such. In order to repair the pump the handle and fulcrum are taken off, the bucket is dropped, as shown in Fig. 2, over the valve cage at the bottom;

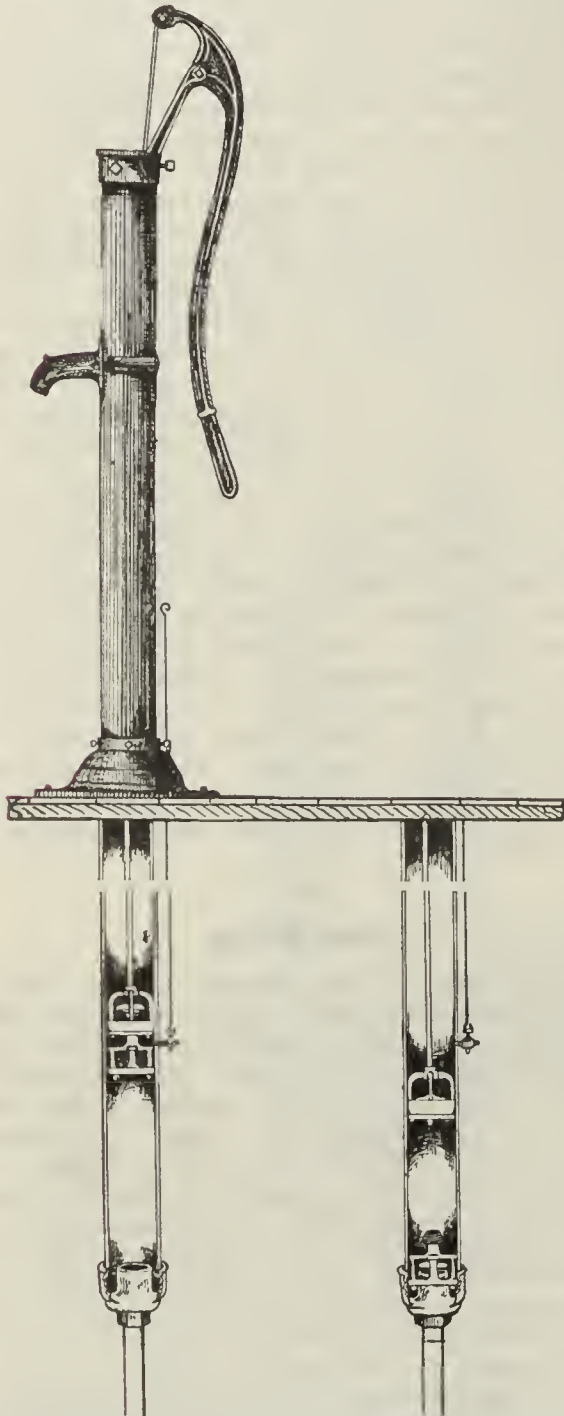


Fig. 1.

Fig. 2.

The Williams Pump.

the rod is then turned to the right several times and the entire working parts of the pump are pulled up, as in Fig. 1. It is explained that a bar across the valve cage raises the poppet valve in the bucket, which allows the water to pass through, and that the valve cage and the check valve being lifted off the seat the suction is broken and the rod, bucket and valves can be drawn out with ease. It is pointed out that this arrangement obviates tearing up the platform, getting into the pit and uncoupling rusty pipes to take out the bucket and valves. After repairing the parts they are put in the same position as before, placed in the barrel, dropped to the bottom and the screw rod is turned to the left until the bucket and valve cages are disconnected. The fulcrum and handle are then replaced, and in ordinary wells, it is remarked, the pump will work without priming. The time required for repairing the

pump is stated to be 15 minutes. The bars in the valve caps and the lugs on the cage form a brace to allow the bucket and valve cages to connect or disconnect by means of threads. The pump has a brass drain cock that can be opened or closed at will, to prevent water freezing and bursting the pump. It also prevents a continual waste of water. The base being fastened by set screws is adjustable. The manufacturers state that the flow of water is perfect and that the pump has no age limit.

### Richmond Heaters.

The Richmond Company, whose main office and works are at Norwich, Conn., and whose New York office is in the Park Row Building, have issued an exceedingly attractive catalogue of 78 pages. It is bound in heavy paper covers, having an illustration of a Richmond boiler embossed in red on the front cover. The contents of this catalogue are of a character to greatly interest heating contractors, as well as others who are investigating the merits of different types of boilers. Not only are illustrations given showing the usual exterior and broken views, but numerous cuts are presented showing sections in outline and details of all the parts. The styles of flues used for hard and soft coal respectively are thus set forth in a manner to enable their construction to be thoroughly comprehended. These outline views are so numerous as to cover many pages of the catalogue.

The first construction to which attention is called is the D series of the Richmond boiler for steam and for water, shown in the 18, 21, 24, 36 and 50 inch sizes. This boiler is of the vertical section type, and the illustrations presented cover a wide range of sizes adapted to all requirements. Tables of dimensions and capacities giving all such details needed by fitters take up ten pages. The No. 830 steam boiler and No. 307 hot water boiler are likewise illustrated and described in full, together with complete tables of dimensions and capacities. The Round Richmond boilers receive ample treatment. These boilers are thoroughly original in design and so simple in construction that "they can be set up as easily as a sheet iron stove." The main body of the boiler is in one single casting without joints of any kind. Water ways are arranged in star shape with arms radiating from a common center immediately above the fire pot. This insures very rapid heating of the water, making the boiler of high efficiency. The Round boilers are made in a variety of sizes to suit all requirements. This catalogue is so handsomely gotten up that it will undoubtedly be preserved for frequent reference.

### Plumbing Inspection in Washington, D. C.

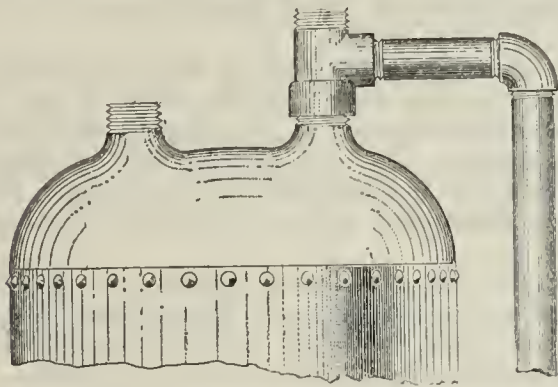
The annual report of O. L. Ingalls, Inspector of Plumbing in the District of Columbia, just submitted to the District Commissioners, shows 22,621 inspections under the direction of his office during the fiscal year ending June 30, 1902, an increase of 929 over those of the previous year. These comprise 3868 examinations of existing plumbing, 7126 inspections of remodeling, extensions and repairs, 6017 inspections of plumbing in new buildings, 1996 peppermint tests, 1283 inspections of gas fitting and gas fixtures, 658 inspections of lead water service pipes, 754 sewer laterals tapped into main sewers, 55 new terra cotta house sewers and 760 repairs to terra cotta sewers. Plumbing plans were examined and approved and certificates issued for 1008 new buildings, an increase over last year of 37.

Thirty-eight cases involving violations of the plumbing and gas fitting laws and regulations were brought to the attention of the police court; 19 were for violation of the plumbing laws, three for employing unregistered plumbers and gas fitters, one for excavating public space without a permit and 15 for violation of the plumbing regulations. Fines were imposed in 18 of these cases. Mr. Ingalls urges that the question of providing toilet stations for both men and women in the city of Washington is of such importance that efforts should be made to secure permission from Congress to establish such stations without loss of time.



### Lawler's Boiler Connection Fittings.

The growing custom of connecting range boilers with water backs by means of brass pipe has confronted the plumber with many difficulties, owing to the lack of proper or convenient fittings. In the accompanying illustrations are presented two fittings adapted for special use. Made by the Lawler Water Feed & Damper Regulator Company, 181 Mercer street, New York. In Fig. 1 is shown a special boiler tee, particularly adapted for connecting the pipe carrying hot water from the water heater to the hot water service pipe at the top of the



Lawler's Boiler Connection Fittings.—Fig. 1.—Special Tee for Quick Heating Connection.

boiler. This form of connection is specially desirable with gas heaters and also where the water back has hardly sufficient power for heating all of the water in a boiler with which it is connected. This tee is made in two forms. That shown in Fig. 1 is designed to connect with the regular boiler spud, screwing on to the outside of it at the top, and is arranged so that the regular coupling can be connected to the top of the tee. The tee is also arranged so that the boiler spud can be removed entirely, and the tee with a male thread at each end screwed in the place of the spud and the regular boiler coupling screwed on the top end of the tee. The tee shown in Fig. 1 is well adapted for making a top connection, where the boiler is already connected up with lead service pipe, as the pipe can be bent so as to permit

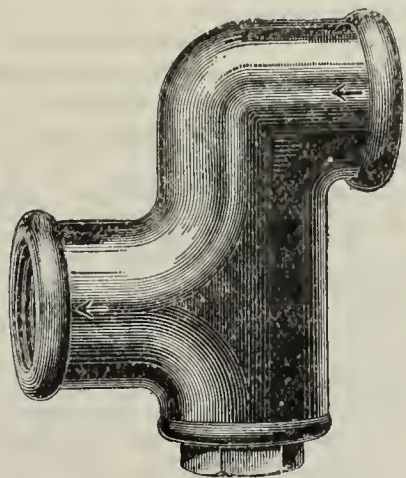


Fig. 2.—Lawler's Return Circuit Check Valve.

the insertion of the new tee. Another fitting which is of convenience where a circulating system is used, is the return circuit check valve shown in Fig. 2. This is connected to the cold water pipe at the bottom of the boiler which supplies the water back, and prevents short circulating or the cold water running up to the circulating pipe and flowing from some nearby hot water faucet. The check in this valve, when in its normal position, is fully open, and being made of aluminum it is very light and rises to its seat readily at the slightest back movement of the water.

The company have recently issued a new catalogue calling attention to these fittings and many others that are of equal interest and convenience to the plumber.

THE plumbing shop of Ed. Hantz of York, Pa., was damaged by fire on August 28.

### New York City Notes.

Trade is steady, with nearly every one doing something. The jobbing and overhauling plumbers report that they are getting busy, with good prospects for the fall.

\* \* \*

Among the new work plumbers on the West Side, Polatschek & Spencer of 2603 Broadway are probably the busiest, part of their work being a six-story apartment on Ninety-fourth street, east of Riverside Drive, and on Ninety-seventh street, west of Broadway, and the same street, east of Riverside Drive, two ten-story apartments, each 100 foot front.

\* \* \*

Some of the other West Side jobs are five private American basement houses on One Hundredth street, west of Broadway, which are being done by Black Brothers of St. Nicholas avenue, and an eight-story apartment on Broadway, between Ninety-fourth and Ninety-five streets, being done by J. J. Falihee, while Lyman & Costello have two eight-story apartments, each 100 x 100 feet, on Ninety-fourth street, east of Riverside Drive.

\* \* \*

W. Y. Jack & Co. are still getting work, having a factory at 520-528 West Twenty-seventh street and an apartment at 135 to 141 West Twentieth street.

\* \* \*

Chas. Hensle, who is located in the fashionable apartment house locality, has a job at 129-131 West Forty-seventh street; T. A. Hill has an apartment at 139-141 West Forty-fourth street; Chas. T. Mander is plumbing an apartment at 142-146 West Forty-ninth street; John F. Barry has a bachelor apartment at 17 to 21 West Thirty-second street, and Thomas Kirkwood has two private houses on Fifty-second street, west of Park avenue.

\* \* \*

Association matters are quiet just at present, but this month will bring the members back from the country and meetings in all the branches are likely to be well attended.

### Heating and Plumbing Notes.

W. J. HYLAND, Springfield, Mass., has just completed the contract for steam fitting and plumbing the establishment of the Henly Machine Company. Mr. Hyland has lately been awarded the contract for the heating of C. E. Lynch's store on Main street, Springfield, and has a number of other heating and plumbing contracts in hand.

THE LOUIS LIPP COMPANY, manufacturers of Plumbers' Supplies and Iron Enameled Bathtubs, Cincinnati, Ohio, advise us that they have been very busy getting settled into their new quarters on Mitchell avenue and the B. & O. S. W. Railroad at Winton place, a suburb of Cincinnati. The new plant is of very large size, occupying an entire block, the different buildings being 600 feet long. The company are sending out an illustrated folder calling attention to their new patented Low Down Closet Combination. Illustrations are given showing the Champion, Columbian and Universal Low Tank Wash Down Siphon Combination Closets, and the Glenwood Low Tank Siphon Jet Combination. The Tanks and Covers that go with these goods are made of quarter sawed oak lumber, and the fixtures are of the highest grade, manufactured at the concern's own works. The company have a branch at 20 High street, Boston, Mass.

BIDS for the gas fitting, sewerage and plumbing, according to plans and specifications, of the hospital building of the St. Louis Southwestern Railway Company at Texarkana, Ark., will be received until September 15 at the office of R. M. Milligan, 120 Chemical Building, St. Louis, Mo.

JAMES A. MOORE of Seattle, Wash., is installing a \$25,000 steam heating and power plant in the Arcade Building in that city.

GEORGE NORWOOD, Biddeford, Maine, has been awarded the contract for plumbing and heating the Thornton Memorial Library at Saco, Maine.



THE directors of the Street and Sewer Department of the city of Wilmington, Del., have awarded to Joseph Jenkins of that city the contract for installing a steam heating plant in the new city building at the corner of Sixth and King streets, at his bid of \$398.

M. M. MILLS is closing out his stock of Plumbing Supplies and Hardware at Cooperstown, N. Y.

SEALED PROPOSALS for the construction work and heating in connection with the erection of an armory for the Sixty-fifth Regiment, N. G., N. Y., in Buffalo, N. Y., will be received at the headquarters of the National Guard, room 161, 280 Broadway, New York City, until noon, on Tuesday, September 9.

CHAIRMAN MEADE D. DETWEILER, at Harrisburg, Pa., will receive bids until September 10 for plumbing and heating with steam, vapor or hot water, the National Home for Aged Elks, at Bedford City, Va. Plans and specifications can be had on application to the architects, Lewis & Burnham, National Bank Building, Lynchburg, Va.

FRANK P. TULLY of the plumbing firm of Dolan & Tully, Columbus, Ohio, died on August 23 at his home in that city from a complication of ailments, from which he had suffered for some time past. Mr. Tully, who was in his thirty-eighth year, leaves a wife and two children.

THE plumbers' strike at Norfolk, Va., which has been on for more than two months, is still unsettled, without indication of an early agreement. There is some talk of the master plumbers importing labor from other cities to fill the place of the strikers.

DR. J. T. DURYEA, who for some time has been medical superintendent of the Kings County Hospital, Brooklyn, N. Y., has resigned his office to accept the position of general manager of the Colwell Lead Company, 63 Centre street, New York, and will take up his duties with that concern about October 1. Dr. Duryea is one of the best known Brooklyn physicians, and under his management the Kings County Hospital has been made a model institution.

THE seventh annual convention of the Washington State Association of Master Plumbers opened at Plumbers' Hall in Seattle on Monday, August 25. A business session occupied the morning, and in the afternoon the members of the association and their friends were taken on a pleasant excursion on Lake Washington. In the evening the delegates were entertained at a reception and ball tendered in their honor by the Seattle master plumbers. The business of the convention was continued the following morning, and in the afternoon the visiting delegates were taken to the races, where one of the events was a race for a prize of a silver cup offered by the master plumbers of Seattle. The sessions of the convention continued on Wednesday and Thursday, and concluded with a banquet tendered to the visiting delegates by the local master plumbers.

At a meeting of the Master Plumbers' Association of Grand Rapids, Mich., held last week, the matter of compensation for unsuccessful bidders on jobs was discussed and a resolution was adopted declaring that, beginning September 1, 1902, the members would make a minimum charge of 2 per cent. on the gross amount of each contract figured on, whether from architect's plans and specifications, or from those furnished by the owner. This action, it is stated, was made necessary to prevent customers peddling their bids around a dozen establishments, each one of which is put to a large expense in taking measurements and making estimates, for which the firm get nothing unless they should happen to be the successful bidders. This amount of 2 per cent. will be payable upon delivery of the bid. The successful bidder, however, will not receive any compensation.

Bids will be received until September 11 by the School Board of Greensboro, N. C., for the heating of the Lindsay Street School Building in that city, the work to be completed by December 1, 1902.

MARK CONNOLLY, at one time a well-known plumber of Pittsburgh, Pa., died on August 29 at his home in the suburbs of Knoxville after an illness of three weeks from appendicitis. He had been an invalid for some time and not able to follow his trade. Mr. Connolly

was born in Ireland and came to this country when 18 years of age. He is survived by three sons and four daughters.

WE have received a copy of the proceedings of the second annual convention of the State Association of Master Plumbers of California, held in April in San Francisco. In connection with these proceedings a synopsis is given of the formation of the Interstate League Association of Master Plumbers of the Pacific Slope, held in San Francisco on April 21 to 23. The cover of the pamphlet calls attention to the fact that the Pacific Slope is to be honored by the twenty-first annual national convention of the National Association of Master Plumbers of the United States, which is to be held in San Francisco in 1903.

THE PRIZER-PAINTER STOVE & HEATER COMPANY, 156 Fifth avenue, New York City, have issued a card of neat design calling attention to their Henderson Water and Steam Heaters. The card is of the size of a postal card and bears on it the trade-mark of the company, together with an illustration of the Henderson Vertical Section Heater.

J. C. ST. JOHN of Colorado Springs, Col., has secured the contract for placing a new heating apparatus in the Santa Fé, North and Park streets school buildings at Trinidad, Col. The contract is for about \$5200.

T. J. HUMPHREY of Kalamazoo, Mich., is manufacturing a Water Lift, known as the National.

It is reported that a company have been organized with a capital of \$15,000 to manufacture Faucets at Antrim, N. H. Enos W. Thayer of Meredith, N. H., is interested in the enterprise.

THE contract for heating and ventilating the new St. Joseph's School, connected with St. Elizabeth's Church at Convent, N. J., has been awarded to Tompkins & Welsh of Morristown, N. J.

AUGUST GEIGER, Philadelphia, Pa., will install a hot water heating apparatus in the Jewish Maternity Hospital in that city.

#### New Firms and Changes.

THE OKLAHOMA IRON WORKS of Guthrie, I. T., have been incorporated with a capital stock of \$25,000. The new company intend to erect a foundry and machine shop and will engage in the business of installing steam heating plants.

THE HEATING & VENTILATING COMPANY of Wheeling, W. Va., have been incorporated with a capital stock of \$100,000 by A. G. Hubbard of Wheeling, A. L. Badger of Pittsburg, Pa., Henry A. Stengle of Wellsburg, W. Va., and others.

THE SOUTHERN BRASS COMPANY, recently incorporated in Baltimore, Md., with a capital of \$3000, to manufacture and deal in Plumbers' Goods and Supplies, have organized by the election of Frank A. Brandy, president; Edward A. Cassidy, secretary, and James R. Buckingham, Jr., superintendent.

THE STANDARD HEATING & SPRINKLING COMPANY of Montreal, Canada, have been incorporated with a capital stock of \$50,000, to install heating plants, fire extinguishers and electrical appliances, and to carry on a general plumbing business. The incorporators are James Cochrane, Henry Miles, Louis D. Robertson, John W. Blair and Francis J. Laverty, all of Montreal.

NATHAN RUBENSTEIN, 552 Grand street, New York, manufacturer of the N. R. Seat Attachment, has connected himself with Schulman & Co., general contractors, of 176 Broadway. The new firm will do a general plumbing and building business under the firm name of Rubenstein & Schulman. They will also continue to manufacture the N. R. Seat Attachment for water closets.

NELSON MORFORD AND DANIEL W. MILLER have formed a partnership to conduct a plumbing business at St. Johnsville, N. Y.

THE RICHMOND PLUMBING & MANTEL COMPANY of 26 North Ninth street, Richmond, Va., have been incorporated with capital stock of \$10,000. The officers are: J. G. Davidson, president; W. H. Yarborough, vice-president, and H. T. Burnley, secretary.



## THE LETTER BOX.

*Inquiries in regard to practical questions of general interest are invited, in reply to which we shall be glad to receive suggestions and information from our readers.*

*Correspondents are requested in all cases to give their names and addresses, which will not, however, be published or disclosed without their consent.*

### WILL FURNACEMEN HELP?

From F. F. H., Woodbury, Conn.—I notice in *The Metal Worker* of August 30 an inquiry from "A. S." of Alden, Iowa, regarding the heating of two stores under the same roof. I should place a No. 30 Kelsey generator practically where designated on the plan shown in connection with the article referred to, and run one 16 and one 14 inch pipe respectively, as directly as possible into each store, just outside of the counters, using 16 x 20 and 14 x 20 registers respectively. Then I should take cold air from just outside of the counters in each store near the north front and following along close to the dividing wall with a 16 and 14 inch galvanized pipe respectively, connecting under the furnace at the proper place. These cold air pipes should be properly protected from contact with the cellar wall as well as the furnace itself, otherwise the arrangement would not work satisfactorily, for the wall would absorb a great part of the heat. Arranged this way I think the furnace could not help working perfectly and economically.

### HEATING SWIMMING TANKS.

From A. B. C., Massachusetts.—Will you kindly give a solution of the following proposition, with formula and result: A swimming tank is to be heated which contains 20,000 gallons, receiving its water supply from an artesian well at a temperature of 50 degrees. The water is to be heated to 80 degrees or raised 30 degrees in eight hours' time. No allowance is to be made for loss of heat by radiation from the sides of the tank or the surface. How many pounds of coal will be required? How large should the grate area be? What size of hot water heater should be provided, as expressed in square feet of radiation as commercially rated?

**Note.**—We would refer our correspondent to an article treating this subject that is presented in another column and also to a similar article printed in *The Metal Worker* of September 28, 1901.

### CLEANING SANITARY ENAMEL.

From T. R. W., Port Gibson, Miss.—Will *The Metal Worker* kindly give some recipe for removing stains from enameled iron bathtubs and washbowls.

**Answer.**—For beauty of luster, delicacy and fineness of surface and purity of color, the enamel of white enameled sanitary plumbers' ware has no equal, but like many other fine things it has a weakness, and its qualities for withstanding gritty or acidulated cleansing pastes or solutions are probably the frailest of all. The makers of this ware understand its nature better than any one else and they confine themselves to recommending the frequent use of soap and warm water, gasoline, or gasoline in water followed by soap and warm water. If cleansed daily, soap and water should be sufficient, and will if the surface has been properly cared for from the start. If, however, something is used that destroys the luster—that practically poreless fused surface—the enamel will eventually pit to the flint base and will deteriorate rapidly under any but the utmost care with the material first mentioned. Rust where the faucets discharge should not be allowed to accumulate. Indeed, the surface should be kept clean at all times, which is easy if not neglected. But if dirt or rust once get "set" on the surface it is not easy to remove and the temptation to resort to something radical is hard to overcome. When rust stains persist in showing it is probable that the surface is already imperfect and it is questionable whether it is better to let them remain or take the risk of pitting by continual hard cleaning. All enamels are not made by the same process and while

some articles might be cleaned with unusual material without injury, those of another make would be ruined by it. Therefore no directions for cleaning enameled goods can safely be published for general use aside from those offered by the manufacturers.

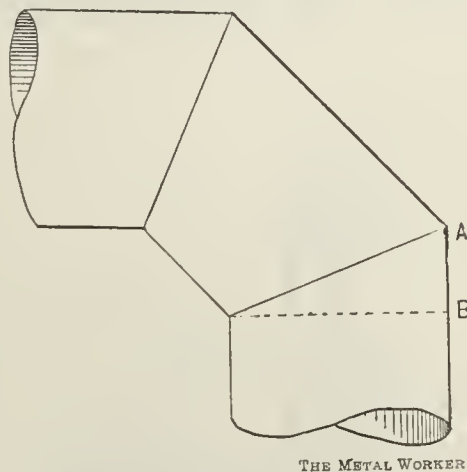
### RISES FOR ELBOWS.

From G. P., Battle Creek, Mich.—Will you kindly print in *The Metal Worker* the rises for elbows of from 3 up to 10 pieces and from 2 to 36 inches in diameter.

**Answer.**—The rise in an elbow is equal to the difference in length between the longest side and the shortest side of an end piece. In the accompanying illustration, showing a three-piece elbow, the distance A B is the rise. The following are the rises of elbows of from 3 to 10 pieces, the diameters of which are 1 inch:

|                                 |                                 |
|---------------------------------|---------------------------------|
| 3 piece elbow, 0.414 inch rise. | 7 piece elbow, 0.132 inch rise. |
| 4 " " 0.268 " "                 | 8 " " 0.113 " "                 |
| 5 " " 0.199 " "                 | 9 " " 0.098 " "                 |
| 6 " " 0.158 " "                 | 10 " " 0.087 " "                |

To find the rise for an elbow of any diameter multiply the rise given in the above table by the diameter



Rises for Elbows.

in inches of the desired elbow, and the result will be the rise in inches for the desired elbow. Thus, to find the rise for a seven-piece elbow whose diameter is 11 inches multiply 0.132 by 11, which will give 1.452 inches, the desired rise.

Sets of developed elbow patterns for two, three and four piece elbows of from 1 to 20 inches in diameter, 60 patterns in all, can be supplied by our Book Department for \$1, postpaid; also an Elbow Chart, by which is determined the rise of miter lines of elbows of any diameter and the number of pieces for any angle. The price of this chart is 50 cents, postpaid.

### ROOFING MATERIALS.

From Reader, Cumberland, Md.—I have seen a great deal written in your paper and other journals about tin as a roofing material, but I have not yet noticed any article regarding asbestos roofing, rubberoid roofing, Carey's roofing and lots of other roofing materials which are guaranteed for ten years and are claimed to be fire proof. If any of the readers of *The Metal Worker* have had experience with the above named style of roofings I should be glad to hear from them. In some localities a great deal of this kind of roofing is used.

### REMOVING STAINS ON WALL.

From S. B. W., Johnson City, Tenn.—I have recently put in secret gutters on a house that is covered with slate. The house is veneered with cream colored brick, and before the down spouts were put up the rain washed small particles down from the slate roof and stained the brick wall. The common muriatic acid used for cleaning a brick wall fails to remove this stain. I desire to know if you or any of your readers can give me a receipt for a fluid that will successfully remove this stain. If you can do this I shall be greatly obliged.

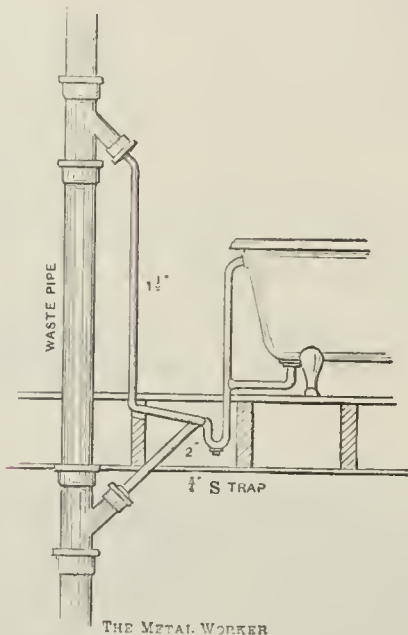
**Answer.**—We can only advise our correspondent to try a saturated solution of oxalic acid in water on the stained parts of the wall. Keep it wet for a few hours,



when it should be washed with water and a brush. This acid is very poisonous and should be avoided on the person and clothing. If this fails we would suggest rubbing the face of the stained wall with the same kind of brick and washing it. There is a possibility that sulphuric acid may do better than murlatic acid in some cases of stained walls.

### A QUESTION FOR PLUMBERS.

From D. F. N., New York.—Noticing the question of "D. & E.," with the accompanying sketches, in *The Metal Worker* of August 23, I herewith present my answer to the same. In the first place the drum trap is considered by sanitary experts a thing of the past. In most of our Eastern cities these traps have been condemned, as they are considered disease breeders, for the reason that foul matter may lie dormant in the interior of the chamber for months without cleaning. The three-quarter S and full S drawn lead traps are the standard traps, so far, nowadays, as it has been proved that they will clean themselves. Now in regard to the combination vent and trap cover in Fig. 1 of the illustrations in the article above



A Question for Plumbers.

referred to. In the sketch it appears to have a coupling which contains a washer on the vent connection. This would be held as a violation of the plumbing laws in New York City, as all connections outside must be made so that no jar or shock will disturb them. Another feature of the modern job is that the trap must be placed as near the fixture as possible. Grease traps with a special cold water jacketed chamber have been allowed to prevail where a special application has been made for the protection of the sink drain connected to the house drain. These are combined with the seat and interior of the trap, for the grease interceptor can be removed readily and replaced after cleaning. In the accompanying sketch is shown the latest method of performing the work under a bath.

### CLOSED TANK WATER SYSTEMS.

From Liberty Cap, Yellowstone Park, Wyo.—Kindly inform me through *The Metal Worker* as to the best method of connecting a closed expansion tank to a hot water heating system, if such a tank is to be recommended, where the pressure is 69 pounds to the square inch. Please give information by means of a cut, if it is not asking too much.

Note.—The experts who have given the closest observation to this method of heating agree that it is more expensive, as far as fuel consumption is concerned, but there may be a slight saving in the first cost of the plant. With a closed tank system there is always the element of danger due to the safety valve which should be placed

on it becoming stuck in its seat, allowing a high pressure to be generated which, on numerous occasions, has resulted in an explosion which has not only wrecked the heating system, but also done considerable damage to the building in which it was installed. Aside from these objections there is no occasion for any change in the method of connecting the tank from that which is common in the connection of open tanks. The closed tank should be so arranged that the air from the system can escape and the water can run in until it makes its appearance at the bottom of the tank. The supply should then be shut off and the safety valve set at whatever pressure the system is to carry. The expansion of the water, on heating, will compress the air that remains in the tank, which will serve as a cushion. It is claimed that such systems circulate more freely than open tank systems. This may be true where the piping has contractions or pitches that should be removed, or is of smaller size than should be used. This system is sometimes used to help out where the radiation is a little short, and by means of a higher temperature in the water, at some waste of fuel, it is made to serve a purpose. The open tank system, through its many advantages and absence of risks, having supplanted the high pressure or closed tank systems in public favor, it would be well in this instance for our Western friend to follow the blazed track.

### HEATING WATER WITH STEAM.

From A. B., Jersey City, N. J.—We should be glad to have information in reference to a piece of work which we are called upon to complete. It is proposed to put a 35-gallon boiler in the basement to take the place of the present range boiler in the kitchen. This boiler is to have no connection whatever with the water back of the range as the water back is to be taken out of the fire chamber and replaced with fire brick. The building is heated by a steam boiler and the proposition is to connect the pipe from the steam boiler with a coil inserted in the boiler, which it is thought should be suspended horizontally from the ceiling of the cellar. In the summer the water is to be heated by gas. What we should like to know is: Has this been done before? Would an upright boiler answer the purpose? Will a 1-inch pipe from the steam heater be large enough? How many feet of pipe should be placed in the coil? If an upright boiler be used should the steam pipe be connected at the top or the bottom?

Answer.—What our correspondent proposes is thoroughly practicable and is often done. It would seem, in this instance, that a horizontal boiler would be more convenient than a vertical one. Boiler manufacturers make boilers adapted for this work with steam coils in them so that all that is needed is a connection from the steam heater, the steam entering the coil at the top and the condensation leaving it at the bottom and returning to the boiler below the water line. A 1-inch steam pipe should supply all the steam necessary from a low pressure heating apparatus for heating the water in a boiler of the size mentioned. The coil should contain 1 lineal foot of 1-inch pipe for every 5 gallons of water to be heated, although some variation from this quantity of pipe will not interfere materially with successful operation. In an upright boiler the steam coil is located in the bottom of the boiler and the steam connection is made at about the same point that the hot water connection for the water back is made. The book, "Kitchen Boiler Connections," which can be furnished by our Book Department, gives information on this subject.

### REPAIRS WANTED FOR NEW ENGLAND RANGE.

From W. L. S., Lanes Bottom, W. Va.—I want to get repairs for a stove which has in raised letters on the door "New England Range Company," but no address is given. It is a regular steel range with six holes in the top and water tank on left side as one stands facing the range. I have written to several foundries, but can get no information as to the makers. If any of the readers of *The Metal Worker* can give me the desired address it will be greatly appreciated.



# TRADE REPORT.

## MARKET SUMMARY.

**Pig Tin** has declined about  $\frac{1}{2}$ c. during the week, with dull market.

**Copper** continues weak, with small volume of business.

**Pig Lead** is firm and quiet.

**Spelter** continues strong, with a marked scarcity of spot metal.

**Antimony** is quiet and unchanged.

**Nickel** is in fair demand at unchanged prices.

**Aluminum** continues in good demand, with prices unchanged.

**Tin Plates** are more active in a small way, but dull as to large business, with prices unchanged.

**Black Sheets** are in fair demand; prices quotably unchanged.

**Galvanized Sheets** are more active in a retail way, but prices are irregular.

**Scrap Iron** continues in active demand, with prices strong.

**Scrap Brass and Copper** are weak and dull.

**Foundry Iron** continues extremely scarce, with prices nominal.

**Sheet Copper** is in good demand and firm in price.

**Sheet Zinc** is fairly active, with prices very firm.

**Hardware** is moving in good volume, with prices, as a rule, steady and strong.

**Plumbers' Supplies** are in good demand, with prices firm all along the line.

**Galvanized Ware** has been advanced in price.

**Wrought Washers** were marked up 20c. per 100 pounds.

**Sash Weights** have been advanced \$2 per ton.

**Wire Nails** are more active; prices unchanged.

**Cut Nail prices** have been reaffirmed; movement is fair.

**Cordage prices** are irregular.

**Window Glass** is unchanged.

**White Lead** is in good demand at former prices.

**Linseed Oil** is weak and quiet.

**Spirits Turpentine** rules strong and is  $\frac{3}{4}$ c. higher.

**Old Rubber** is in good demand, with prices firm.

**Oakum** has been advanced  $\frac{1}{4}$ c. a pound.

## METAL MARKET.

NEW YORK, September 5, 1902.

**Pig Tin.**—Owing to heavy arrivals the market on Tin has declined sharply. The lowest point of the week was reached on Thursday, when sales of spot were made here at 27.05c. in wholesale lots. While a somewhat steadier feeling prevailed at the close, prices were considerably below the figures of a week ago, jobbers' quotations on Straits Pig in small lots being 28 $\frac{1}{4}$ c. to 28 $\frac{1}{2}$ c. per lb. The London market was also very weak and lower, owing to free selling by speculative holders. Business has been quiet, as might be expected under existing conditions. Shipments from the Straits for August were the heaviest for any single month during the last five years, amounting to 5200 tons. According to the statistics compiled by C. Mayer, secretary of the New York Metal Exchange, the visible supply was as follows:

|                                             | Tons.  |
|---------------------------------------------|--------|
| Total visible supply August 31, 1902.....   | 16,293 |
| Against visible supply July 31, 1902.....   | 16,809 |
| Against visible supply August 31, 1901..... | 16,327 |

**Copper.**—Weakness characterized the Copper market during the greater part of the week, but a firmer tone prevailed at the close. Prices, however, are still in buyers' favor. Lake Ingot in small lots rules at about 12 $\frac{1}{2}$ c. to 12 $\frac{3}{4}$ c. per lb., and Casting Copper at 12 $\frac{1}{4}$ c. to 12 $\frac{3}{8}$ c. The statistics published this week show that on January 1 of this year the enormous supply of

135,524 long tons existed in this country. During the first six months of this year through heavy exportation and large domestic consumption this quantity was reduced by July 1 to 99,203 long tons. But through the decrease in exportation and smaller consumption during the month of July it is estimated that this quantity was increased by 5756 tons. According to this calculation, on August 1 the supply in this country was up to 104,959 long tons. As exports have been moderate and consumption has not increased here a further accumulation of at least 5000 tons is said to have taken place during the month of August. The statistics of C. Mayer, secretary of the New York Metal Exchange, show a total exportation of 11,469 tons for the month of August.

**Sheet Copper.**—The demand for Sheet Copper showed a slight increase during the week, and the volume of inquiry was referred to as very good. Prices remain firm on the basis of 18c. per lb. for Sheet Copper from store.

**Pig Lead.**—No change has been developed in the market for Lead. Prices are firm and business rather quiet. American Pig in small lots is quoted at 4.45c. to 4 $\frac{1}{2}$ c. per lb. St. Louis advices indicate an absence of new features in the Lead market at that point. The volume of demand and inquiry showed no increase and prices remained at the level of a week ago.

**Spelter.**—This metal is still very firm, with prices continually tending to advance. Spot metal is very well held by a New York concern who recently acquired a 1000-ton lot which had been held in reserve for about four years. The volume of business is limited, owing largely to the small offerings of spot metal. Jobbers quote good Western brands in small lots at 6 $\frac{1}{2}$ c. to 6 $\frac{3}{4}$ c. per lb. An important announcement is made in the trade to the effect that the Collinsville Zinc Company of Collinsville, Ill., who have been idle for about a year owing to low prices and the success of the concern in the gas belt will resume operations. The production of this plant will relieve the situation somewhat. Edward F. Byrne of 100 William street has been retained as sales agent for the company. It will be recalled that Mr. Byrne handled this well-known brand before the closing down of the plant. St. Louis advices indicate that transactions in the Spelter market are of moderately large volume, with prices firm and on the up grade.

**Sheet Zinc.**—The demand for Sheet Zinc is of the usual proportions. Prices are firm and unchanged at 6 $\frac{3}{4}$ c. per lb. for 600-lb. cask lots, and 7 $\frac{1}{4}$ c. to 7 $\frac{1}{2}$ c. for smaller quantities.

**Antimony.**—No change is noted in this metal. Cookson's in small lots is selling at 10c. to 10 $\frac{1}{4}$ c. per lb.; Hallett's at 8 $\frac{3}{8}$ c. to 8 $\frac{3}{4}$ c. and U. S. at 8 $\frac{1}{4}$ c. to 8 $\frac{1}{2}$ c.

**Nickel.**—Is unchanged. Small lots rule at about 55c. to 60c. per lb.

**Aluminum.**—The demand for Aluminum is referred to as good and prices are without change. Small lots of No. 1 Ingot, guaranteed 99 per cent. pure, are quoted at 37c. per lb. and 100-lb. lots at 35c.

**Tin Plates.**—The market, so far as large business is concerned, has remained dull and uninteresting with an absence of any important buying. The retail trade, however, seems to have picked up considerably during the week, jobbers reporting a comparatively brisk business as compared with that of recent weeks. The demand is materially larger for Roofing Plates than at the same season a year ago. The fact that more than half the capacity of the American Tin Plate Company is now idle has a tendency to check any material weakness in the Tin Plate market at the present time. Jobbers quote American Bessemer Coke Plates I C, 14 x 20, at about \$4.70 to \$4.90 per box, in moderate sized lots delivered at New York and corresponding points. The Welsh Tin Plate market has declined 1 $\frac{1}{2}$  pence, quotations being now 12 shillings 4 $\frac{1}{2}$  pence, Swansea.



**Sheets.**—The Sheet mills report a fair tonnage being placed in Black Sheets, but Galvanized Sheets have continued dull with some concessions in prices on the part of certain of the independent mills. On the other hand the New York jobbers report an improved demand for Galvanized Sheets, which in the last few days has compared favorably with the demand for Black Sheets. Jobbers quote No. 27 One Pass Cold Rolled Soft Steel Sheets in small lots at 3.60c. to 3.65c., and No. 27 Galvanized Sheets at 4.45c. to 4.60c.

Chicago advices are as follows: Galvanized Sheets are freely offered and easy, liberal discounts being granted to the local trade. The official prices from mill, however, are without essential change. In Heavy Sheets the demand is good, and even Light Sheets continue to meet with more favor. Quotations are as follows: No. 27 Black Sheets in small lots from store 3.45c. to 3.55c. Galvanized Sheets in small lots from store are sold at 4.55c. to 4.65c. for No. 27.

**Old Metals.**—Scrap Iron is in strong demand, which keeps full pace with the supply. Prices are very firm but not quotably higher. Old Brass and Copper are dull and weak. Dealers are paying about the following rates for moderate sized lots delivered at New York or corresponding points:

|                                        |         |                  |
|----------------------------------------|---------|------------------|
| Heavy Copper.....                      | per lb. | 10 c.            |
| Light and Tinner Copper.....           | per lb. | 9 c.             |
| Heavy Brass.....                       | per lb. | 8 c.             |
| Light Brass.....                       | per lb. | 6½c.             |
| Lead.....                              | per lb. | 3½c.             |
| Tea Lead.....                          | per lb. | 3 c.             |
| Zinc.....                              | per lb. | 3½c.             |
| Pure Aluminum Sheet.....               | per lb. | 22 c.            |
| Cast Aluminum.....                     | per lb. | 17 c.            |
| No. 1 Pewter.....                      | per lb. | 18 c.            |
| No. 2 Pewter.....                      | per lb. | 9 c.             |
| Tin Plate, per gross ton.....          |         | to \$5.00        |
| Wrought Iron Scrap, per gross ton..... |         | \$15.00 to 15.50 |
| Heavy Cast Scrap, per gross ton.....   |         | 13.50 to 14.00   |
| Stove Plate Scrap, per gross ton.....  |         | 10.00 to 10.50   |
| Burnt Iron, per gross ton.....         |         | 8.00 to 8.50     |

## THE PIG IRON MARKET.

**NEW YORK.**—Importations of foreign Iron continue, and some further cargo lots of English Foundry Iron have been ordered abroad. For large quantities Middlesbro can be laid down for shipment at about \$19. For spot lots considerably higher prices are realized, particularly in domestic, for which as high as \$25 to \$26 for No. 1 is paid. However, the quantities of domestic Iron for immediate delivery are so small, and each transaction is so much dependent upon special circumstances that no general quotation can be given. For delivery in 1903 the following quotations are made: Northern Iron, at tidewater, No. 1 X, \$23.25 to \$24.75; No. 2 X, \$22 to \$22.75; No. 2 Plain, \$21 to \$21.75. Tennessee and Alabama brands, in New York and vicinity: No. 1 Foundry, \$22.25 to \$23; No. 2 Foundry, \$21.25 to \$22; No. 3 Foundry, \$21 to \$21.25.

**CHICAGO.**—Aside from an advance of 50 cents per ton in freight rates from the Southern furnaces to the Ohio River, no feature of importance has been developed in the Pig Iron market during the week. Difficulty still continues in obtaining sufficient supplies of Coke of desirable quality, which fact has caused much trouble to the furnaces and foundries. Poor deliveries of Iron following in the train of the fuel scarcity are sending more buyers into the market for Pig Iron for quick delivery, and the question of obtaining sufficient supplies of domestic Iron is becoming a more serious one from day to day. Some little foreign Iron is finding its way into this territory from the East, but direct importations have been inappreciable. Local Coke No. 1 Foundry for prompt shipment commands \$25 to \$26 per ton. Sales have been made for the second quarter of next year at \$23 at the furnaces. Single cars of No. 1 Southern Coke have been sold at \$27.65; No. 2 at \$27.15 and No. 3 at \$26.65, Chicago. Very few Southern furnaces will contract for the first half of next year, or for the second quarter under \$19 for No. 1, \$18.50 for No. 2 and \$18 for No. 3, Birmingham. The following quotations represent prices for the first half of 1903:

|                                   |                    |
|-----------------------------------|--------------------|
| Lake Superior Charcoal.....       | \$26.00 to \$27.00 |
| Local Coke Foundry, No. 1.....    | 23.50 to 24.00     |
| Local Coke Foundry, No. 2.....    | 23.00 to 23.50     |
| Local Coke Foundry, No. 3.....    | 22.50 to 23.00     |
| Local Scotch, No. 1.....          | 24.00 to 24.50     |
| Ohio Strong Softeners, No. 1..... | 25.50 to 26.50     |

|                                             |                |
|---------------------------------------------|----------------|
| Southern Silvery, according to Silicon..... | 23.10 to 23.50 |
| Southern Coke, No. 1.....                   | 23.15 to 23.65 |
| Southern Coke, No. 2.....                   | 22.15 to 22.65 |
| Southern Coke, No. 3.....                   | 21.15 to 21.65 |
| Southern Coke, No. 1 Soft.....              | 23.15 to 23.65 |
| Southern Coke, No. 2 Soft.....              | 22.65 to 23.15 |

**PHILADELPHIA.**—Immediate conditions in Pig Iron appear to be somewhat easier, due mainly to liberal arrivals from abroad. Consumers have about given up trying to get American Iron, and are decidedly less anxious about it since they have found good substitutes in the foreign article. Some of the Scotch brands are giving great satisfaction, and as they can be delivered promptly the feeling is much easier. As regards prices the market is just about as it was a week ago. Prices abroad are a little stiffer. This is offset by lower freight rates, so that sales are made at about the same prices as before. Cargo lots c.l.f. at about \$19 for Middlesbro No. 3, small lots, \$20 to \$20.50 alongside, or delivered in buyers' yards \$21 to \$21.50. Scotch Iron ranges from \$22.50 to \$23.50, and American at about the same figures as quoted in our last, for city or nearby deliveries during the first half of next year, as follows:

|                      |                    |
|----------------------|--------------------|
| No. 1 X Foundry..... | \$23.50 to \$24.50 |
| No. 2 X Foundry..... | 22.00 to 22.50     |
| No. 2 Plain.....     | 21.00 to 22.00     |

**PITTSBURGH.**—There is practically no Pig Iron market, the furnaces being sold up and consumers covered, many of them through the first half of next year. This applies particularly to Foundry Iron, and it would be hard to find a foundry that has not covered its requirements for all of this year and well into next. Nearly all the No. 2 Iron sold for delivery next year was on the basis of \$21.50 to \$21.75, Pittsburgh, but in exceptional cases higher prices were paid. No. 2 Foundry Iron for shipment over the rest of this year is held at about \$23, Pittsburgh. Some Middlesbro Iron has been sold at \$22.25, delivered Pittsburgh.

## CHICAGO REPORT.

**Scrap Iron and Steel.**—The offerings from the country have increased but little, and with a fair demand the market has remained firm. The following are the prices paid by dealers in carload lots, Chicago:

|                                                        | Per net ton.       |
|--------------------------------------------------------|--------------------|
| Country Wrought Scrap.....                             | \$15.00 to \$16.00 |
| Machinery Cast.....                                    | 14.00 to 14.50     |
| Malleable Cast.....                                    | 12.00 to 13.00     |
| Stove Plate (free from burnt).....                     | 10.50 to 11.00     |
| Burnt Iron and Grate Bars.....                         | 8.50 to 9.50       |
| Sheet Iron and Hoops.....                              | 9.00 to 10.00      |
| Plow Steel.....                                        | 13.00 to 13.50     |
| Breaking Stock.....                                    | 12.00 to 12.50     |
| Old Boilers—whole (Iron).....                          | 9.50 to 10.00      |
| Old Boilers (Iron) cut in single Sheets and Rings..... | 13.00 to 14.00     |
| Old Gas Pipe and Boiler Tubes.....                     | 13.00 to 13.50     |
| Cast Borings.....                                      | 9.00 to 9.50       |
| Turnings.....                                          | 12.50 to 13.00     |
| Horseshoes.....                                        | 13.00 to 13.50     |

**Old Metal.**—Further weakness has been developed in Copper and Brass, especially the latter, but Zinc and Lead have remained firm. Copper Bottoms, Yellow Brass and Yellow and Red Brass Borings are lower, dealers being less ready buyers. The following are the prices paid in this market:

|                            | Per lb. |
|----------------------------|---------|
| Copper Wire and Heavy..... | 10½c.   |
| Copper Bottoms.....        | 9½c.    |
| Copper Clips.....          | 10 c.   |
| Red Brass.....             | 10½c.   |
| Yellow Brass.....          | 7½c.    |
| Red Brass Borings.....     | 7½c.    |
| Yellow Brass Borings.....  | 7 c.    |
| Light Brass.....           | 6¾c.    |
| Pipe Lead.....             | 3.70c.  |
| Tea Lead.....              | 3.35c.  |
| Zinc.....                  | 3.45c.  |
| Tin Foil.....              | 21 c.   |
| Pewter, No. 1.....         | 18 c.   |
| Pewter, No. 2.....         | 11 c.   |
| Aluminum.....              | 20 c.   |

**Old Rubber.**—The offerings have not been excessive, and with a fair demand the market has remained steady. Dealers buy at the following prices. Chicago delivery:

|                            | Per net ton. | Per lb. |
|----------------------------|--------------|---------|
| Garden Hose.....           | \$25.00      | .....   |
| Air Brake Hose.....        | 45.00        | .....   |
| Rubber Shoes.....          | .....        | 7 c.    |
| Rubber Car Springs.....    | .....        | 7 c.    |
| Inside Bicycle Tubing..... | 22 c.        | .....   |
| Outside Tubing.....        | 5 c.         | .....   |
| Black Rubber.....          | 4 c.         | .....   |
| White Rubber.....          | 8½c.         | .....   |

**Rags.**—The market has ruled steady with a fair outlet and moderate receipts. Dealers are offering to buy



Country Mixed Rags at 75c. to 85c. per 100 lbs., Chicago delivery.

**Anthracite Coal.**—There has been a marked falling off in the demand for all kinds of Anthracite Coal, a feeling prevailing that the "strike" has reached its height and that a settlement will be effected soon. Local stocks are light and wholesale prices are nominal, there being few if any offerings of carload lots on track. In a retail way sales are being made at \$9 to \$9.50 per ton.

## THE HARDWARE TRADE.

With the vacation season practically over and the entrance on the fall months a quickening in business throughout the country is to be anticipated. Summer has given manufacturers less than the usual opportunity to accumulate stocks. In many lines they have been working on orders from which their books are not yet entirely cleared. The necessity for repairs and the regular overhauling of plants has of course interfered somewhat with production, and strikes and the difficulty in obtaining materials and fuel have also tended to reduce to no inconsiderable extent the quantity of goods available for the trade during the coming months. While there is a scarcity in some lines the jobbers are unquestionably well supplied with goods for the fall trade and some reports indicate that their stocks are unusually heavy. The goods in warehouses in connection with those ordered certainly show by their volume that a large business is anticipated. Owing to these conditions the demand upon the manufacturers and their representatives has been of late somewhat quiet, but it is now beginning to quicken. Prices are, as a rule, steady and strong. A few lines, owing to special conditions which affect them, are giving indications of slight weakness, which do not, however, cause any disquietude among the trade, who recognize the desirability of a gradual lowering of values rather than a sudden collapse in lines which are unreasonably high. While it is regarded as certain that there must come sooner or later a material decline in values, the date at which it will take place is being pushed further into the future by those who thought it might come during the season on which we are entering. In view of the more than satisfactory crop conditions, when the country as a whole is considered and the prosperity which prevails among the people in practically all sections, the outlook for business during the next few months at least is exceedingly promising.

## NOTES ON PRICES.

**Plumbing Supplies.**—The closing of the summer season in the Plumbing Supply trade has been marked by a considerable increase in the volume of orders received by the jobbing houses, both from the city and out of town trade. Prices show no signs of softening in any direction. On the contrary, an upward tendency is noted in more than one line of goods. The outlook is regarded as favorable for a large volume of business at a satisfactory margin of profit during the coming fall and winter season.

**Galvanized Ware.**—A revision of prices has recently been made by manufacturers of Galvanized Iron Ware, and as a result a number of advances are reported. Pails are quoted \$1 per gross higher, and on Washtubs an advance ranging from 25 to 50 cents per dozen has been made.

**Wrought Washers.**—An advance of 20 cents per 100 pounds has recently been made in the price of Wrought Iron Washers.

**Sash Weights.**—The condition of things in the Sash Weight market in the East is represented by the fact that an advance of \$2 per ton has recently been made in the New York market, the price now being \$25. Stocks in all the foundries are represented as low. The scarcity of fuel and the high price of raw material is the cause assigned for the higher prices now ruling in this line. The harmony which exists between the manufacturers is also an important element in the situation.

**Wire Nails.**—No reduction in the price of Wire Nails for the New York market was announced on the first of the month, notwithstanding the rumors that were circulated to that effect. Some increase in the demand is noted, and prices are maintained at \$2.25 to \$2.30 per keg for small lots from store.

**Cut Nails.**—Prices ruling during August were reaffirmed for the month of September by the Cut Nail manufacturers at a meeting held last week. It was the prevailing opinion that the cost of the raw material did not justify any reduction in the price of Nails. The local demand is confined almost entirely to Steel Cut Nails and is moderate. Small lots from store are quoted at \$2.30 per keg, New York.

**Cordage.**—A slight improvement is reported in the demand for Rope, which the manufacturers hope will have a steadying effect upon the market. Prices are irregular, owing to the lack of orders; also to the various mixtures which are on the market as Sisal and Manila Rope.

**Window Glass.**—Reports indicate that further steps are being taken with a view to harmonizing the Window Glass interests, with a possibility of success. Locally, business is very dull, as buyers are averse from placing orders until the future conditions of the market are settled. The Jobbers' Association quotation for Single and Double Strength Glass from store continues at 88 and 5 per cent. discount.

**White Lead.**—The consumption of White Lead in Oil in August was good, owing to the amount of indoor work which has been under way. Indications point to a continued active demand for the fall. Quotations are unchanged, American White Lead in Oil in retail quantities being quoted at 6½ to 6¾ cents per pound.

**Linseed Oil.**—Holders of resale Oil appearing to be fearful of a further decline in prices have been closing out their holdings at cost, the figures in some instances being 2 to 3 cents below present quotations. This has had a depressing effect upon the market, and together with an estimated crop of new seed of over 30,000,000 bushels, is calculated to cause a further reduction in prices.

**Spirits Turpentine.**—The market for Turpentine has been quiet but firm. Purchases are confined to small lots in the local market. Prices are strong and about ¾ cents higher than a week ago, owing to the firmer position of Turpentine in the South. Turpentine in small quantities is now quoted at 48 to 48½ cents per gallon.

**Old Rubber.**—A fairly good business is reported, with prices steady. Dealers in New York and vicinity are paying about the following figures:

|                                           |                |
|-------------------------------------------|----------------|
| Car Springs, ton lots, per lb.            | .....5c.       |
| Rubber Shoes, less than carloads, per lb. | .....6¾ to 7c. |
| White Wringer Rolls, per lb.              | .....7c.       |
| Inside Bicycle Tubing, per lb.            | .....21½c.     |
| Outside Tubing, per lb.                   | .....5c.       |

**Oakum.**—The manufacturers of Oakum have advanced their prices ¼ cent a pound.

## TRADE NOTES.

C. ROBERT CHURCHILL, 407 Morris Building, New Orleans, La., is reported to be organizing a company to establish a galvanizing plant in that city.

THE annual meeting of the Dairymen's Mfg. Company of New York will be held on September 12 at their office, 6 Harrison street, New York City. The Board of Directors of the company have declared a dividend of 7½ per cent. out of the surplus net earnings prior to August 1, 1902.

THE BURLINGTON BRASS COMPANY, Burlington, Wis., have been organized for the manufacture of Brass Goods and Brass Specialties of all kinds. The new company are erecting a Brass foundry and machine shop. They have organized by the election of G. C. Bush as president, O. O. Storle as vice-president and John P. Gill as secretary and treasurer.

THE A. GARRISON FOUNDRY COMPANY, manufacturers of Rolling Mill Machinery, Chilled Rolls, &c., have completed plans for the improvement and extension of their works on Ninth and Bingham streets, South Side, Pitts-



burgh, which will about double their present capacity. They have just completed a 67-foot extension of their machine shop, and installed a 25-ton electric traveling crane. A new power house will be built and a new foundry, also a three-story building, 48 x 120 feet, for use as a pattern and carpenter shop and for storage purposes. The entire plant will be operated and lighted by electricity.

THE plant of the South Bend Brass & Bronze Company, South Bend, Ind., has been purchased by Joseph Bergan & Co., who will operate it in the future.

WINTER BROTHERS COMPANY, Wrentham, Mass., are distributing an illustrated catalogue and price-list devoted to the Thistle brand of Taps, Dies and Die Stocks.

A MEETING of the Phoenix Galvanizing Company of Pittsburgh was held on August 31 for the purpose of reorganization and to wind up their affairs. The company will be succeeded by the Phoenix Galvanizing & Mfg. Company, which will be conducted under the present management.

POLLANSBEE BROTHERS COMPANY, Pittsburgh, Pa., are sending to their friends a blotter bearing a calendar for the month of September, together with a picture in colors of a small girl gathering golden rod, suggestive of the waning of the year. In one corner is a portion of a map of Pittsburgh, showing the location of the company's new offices and warehouse at Liberty and Short. Second and Third avenues, with an invitation to the trade to come and select their supplies of Tin Plate, Sheet iron, Copper, High Grade Roofing Tin, &c.

THE R. E. DIETZ COMPANY, 99 Lighthouse street, New York, are calling special attention to their Dietz Junior Dash Lamp, which is the smallest size of Cold Blast Dash Lamp made. The manufacturers claim that this Lamp gives a fine light and is absolutely wind proof. It can be used as a Hand Lamp, Dash Lamp or Wall Lamp. The company have issued a new catalogue, No. 33, which will be sent to those desiring it upon application.

J. C. PAUL & Co., manufacturers of Polishes and Enamels, now occupy offices at 57 Dearborn street, Chicago. Formerly the offices were located on Randolph street. The factory still remains, as in 1887, on Roscoe street. The firm announce that the full capacity of the manufacturing and shipping departments has been taxed to keep pace with the orders received during the season. The firm manufacture nine specialties in liquid and paste form, but among the Polishes designed specially for metals they call particular attention to their brand of Burnishine, which is said to contain no acids or chemicals injurious to any metal or to the hands.

It is reported that U. S. Fletcher of Bellaire, Ohio, and others are organizing a company with a capital of \$60,000 to establish an enameling and stamping works at or near Wheeling, W. Va.

THE MORSE-STEWART COMPANY of Portsmouth, N. H., have been incorporated with a capital stock of \$50,000 to manufacture Refrigerators.

### The American Bicycle Company.

After a threatened receivership had been anticipated for some weeks, R. L. Coleman, president of the American Bicycle Company, announced on September 1 that proceedings had been initiated to place the company temporarily in a receivership for the purpose of reorganizing their affairs. This announcement followed the news that the company had defaulted the semiannual interest on its 5 per cent. gold debenture bonds which became due September 1. The failure is attributed entirely to inadequate working capital which the officers of the corporation say has crippled them from the start. The business of the company is said to have never been better than now in their various departments. R. L. Coleman and Colonel Albert A. Pope have been appointed as the two receivers of the company by Judge Kirkpatrick of the United States District Court of New Jersey. The statement is made that the company are perfectly solvent and undoubtedly have an assured future. They control about 70 per cent. of the bicycle output of the United States and have an increasing and profitable automobile business in electric, gasoline and

steam vehicles, as well as a growing and promising trade in storage batteries, for the manufacture of all of which goods they are exceptionally well equipped. It is confidently expected that the proposed reorganization of the corporation will furnish the necessary funds for the proper conduct of their business in the future.

### The American Brazing Company.

The American Ferrofix Company have been incorporated in New Jersey under the name of American Brazing Company, offices and works at 532 West Twenty-second street, New York. The new company, with a capital of \$2,000,000, propose to engage in the business of brazing metals and in the introduction of a preparation used for this purpose.

Their process, which is particularly useful for brazing cast iron, consists in the employment of a compound which is spread upon the broken surfaces of the casting. The parts are then brought together and heated under a blow pipe, if small, or over a coke fire, if large, to a bright red. The effect of this is to decarbonize the iron in the immediate neighborhood of the break. The heat being continued the joint is brazed with brass in the usual way. The union is perfect, and as the brass alloy possesses greater strength than the iron itself the joint is better able to resist strain than any other part of the piece of like sectional area. The process has been successfully applied to the mending of broken pulleys, teeth of gears, frames of all kinds, press housings, &c. It is claimed that any cast iron piece which can be heated properly can be repaired successfully.

#### CONTENTS.

|                                                                                       | PAGE. |
|---------------------------------------------------------------------------------------|-------|
| Editorials—                                                                           |       |
| Our Imports of Iron and Steel.....                                                    | 37    |
| Price Cutting.....                                                                    | 37    |
| The Need of Trade Education.....                                                      | 37    |
| Jobbers and Retailers.....                                                            | 38    |
| A 2240-Pound Ton of Pig Iron.....                                                     | 38    |
| Reminiscences of a Pioneer Stove Manufacturer.....                                    | 39    |
| Stick to the Old Man and the Old Stand.....                                           | 40    |
| The Grate-Spiral Heater. Illustrated.....                                             | 40    |
| The Western Stove Company of Canada.....                                              | 40    |
| Retail Prices of Stoves.....                                                          | 41    |
| Buckwalter Stove Company.....                                                         | 41    |
| Some Crawford Ranges.....                                                             | 41    |
| Buck's Steel Ranges.....                                                              | 41    |
| New Stove Company.....                                                                | 42    |
| The Larson Oil Burner.....                                                            | 42    |
| The Cleveland Gas Range with Reservoir.....                                           | 42    |
| The Acme Oil Burner.....                                                              | 42    |
| Odd Plates.....                                                                       | 42    |
| A New Gasoline Torch. Illustrated.....                                                | 43    |
| L. & G. Ash Cans. Illustrated.....                                                    | 43    |
| Frink's Reflectors.....                                                               | 43    |
| The Armstrong Fastener and Seal. Illustrated.....                                     | 44    |
| Hall's Peerless Mincer. Illustrated.....                                              | 44    |
| Simplex, Pendulum Model, Time Recorder. Illustrated.....                              | 44    |
| Modern Enameling Plants and the Manufacture of Enameled Specialties. Illustrated..... | 45    |
| Sheet Metal Interior Decoration. Illustrated.....                                     | 48    |
| The Empire Iron & Steel Company.....                                                  | 49    |
| "M. F." Brand Tin Roofing.....                                                        | 49    |
| A Brass Catalogue.....                                                                | 49    |
| Course in Sheet Metal Pattern Work.....                                               | 49    |
| Flashings.....                                                                        | 49    |
| International Fire Exhibition.....                                                    | 50    |
| Heating Swimming Pools.....                                                           | 51    |
| Nationalization Plan for Journeymen Plumbers' Union.....                              | 51    |
| A New Use for Standing Waste Fittings. Illustrated.....                               | 52    |
| Walker and Crawford Boilers.....                                                      | 52    |
| Eastern Trade Golf Association Tournament. Illustrated.....                           | 53    |
| The Glauber Company's New Factory.....                                                | 53    |
| Ideal Boilers.....                                                                    | 53    |
| The Williams Pump. Illustrated.....                                                   | 54    |
| Richmond Heaters.....                                                                 | 54    |
| Plumbing Inspection in Washington, D. C.....                                          | 54    |
| Lawler's Boiler Connection Fittings. Illustrated.....                                 | 55    |
| New York City Notes.....                                                              | 55    |
| Heating and Plumbing Notes.....                                                       | 55    |
| New Firms and Changes.....                                                            | 56    |
| The Letter Box—                                                                       |       |
| Will Furnacemen Help?.....                                                            | 57    |
| Heating Swimming Tanks.....                                                           | 57    |
| Cleaning Sanitary Enamel.....                                                         | 57    |
| Rises for Elbows. Illustrated.....                                                    | 57    |
| Roofing Materials.....                                                                | 57    |
| Removing Stains on Wall.....                                                          | 57    |
| A Question for Plumbers. Illustrated.....                                             | 58    |
| Closed Tank Water Systems.....                                                        | 58    |
| Heating Water with Steam.....                                                         | 58    |
| Repairs Wanted for New England Range.....                                             | 58    |
| Trade Report—                                                                         |       |
| Market Summary.....                                                                   | 59    |
| Metal Market.....                                                                     | 59    |
| The Pig Iron Market.....                                                              | 60    |
| Chicago Report.....                                                                   | 60    |
| The Hardware Trade.....                                                               | 61    |
| Notes on Prices.....                                                                  | 61    |
| Trade Notes.....                                                                      | 61    |
| The American Bicycle Company.....                                                     | 62    |
| The American Brazing Company.....                                                     | 62    |
| Metal and Miscellaneous Prices.....                                                   | 63    |
| Labor Exchange—                                                                       |       |
| Help and Situations Wanted.....                                                       | 67    |



ROOFING SUPPLIES, METALS, TIN PLATES, &c.

REVISED SEPTEMBER 5, 1902.

**Aluminum-**  
No. 1 Aluminum (guaranteed over 99% Pure), in ingots for remelting.  
Small lots..... 37¢  
100-lb lots..... 35¢  
Aluminum Sheet, B. & S. gauge.  
In lots of 50 lbs or more.  
Wider than..... 6-in 14-in 24-in  
And including..... 14-in 24-in 30-in  
Nos. 13 to 19..... \$0.42 \$0.44 \$0.47  
" 20..... .44 .46 .49  
" 21 to 23..... .46 .48 .51  
" 24..... .46 .50 .53  
" 25..... .47 .51 .54  
" 26..... .47 .54 .59  
" 27..... .48 .57 .62  
" 28..... .48 .57 .64  
" 29..... .49 .60 .69  
" 30..... .50 .64 .77  
Note.-Lots of less than 50 lbs 5¢ per lb extra.

**Antimony-**  
Cookson..... 10 lb @ 10.4¢  
Hallitt's..... 8 lb @ 8.5¢  
U.S..... 8 lb @ 8.5¢

**Brass, Roll and Sheet.**..... 30%

**Conductors-**

**Corrugated;**

**Round or Square-**

Galvanized 1/2 or more, Not N'd..... 75%

" Not N'd..... 70 & 12 1/2%

" Plain Round, 1/2 or more..... 75%

Nested..... 75%

Galvanized, Plain Round, Not N'd..... 70 & 12 1/2%

**Spiral Lock Seam Pipe-**

Galvanized..... 60 & 60 1/2%

**Spiral Riveted.**

Galvanized..... 40%

See also Elbows and Shoes; Eave Trough Mitres; Strainers, Conductor.

**Conductor Strainers-**

See Strainers, Conductor

**Copper-**

Lake Ingot..... 12 1/2 @ 12 1/2¢

Casting..... 12 1/2 @ 12 1/2¢

Sheet and Bolt..... 18¢ per lb basis

Cold Rolled Sheets..... 19¢ per lb basis

Cold Rolled and Polished Sheets..... 20¢ basis

Polished Sheets..... 21¢ basis

Bottoms, Pits and Flats..... 22¢ basis

**Eave Trough Galvanized**

Territory..... L. C. L.

Eastern..... 80%

Central..... 75 & 17 1/2%

Southern..... 75 & 17 1/2%

S. Western..... 75 & 15%

Terms, 2% for cash.

**Eave Trough Mitres-**

Cap or Slip Joint..... 1st, 25%

**Elbows-Plain Adjustable-**

Eastern List.

Tin..... 30%

Galvanized..... 30%

Perfect Elbows..... 40%

**Stove Pipe-**

Four-Piece

No. 1, 4, 4 1/2, 5, 5 1/2, 6-inch..... 1.05 per doz.

No. 2, 4, 4 1/2, 5, 5 1/2, 6-inch..... 1.05 per doz.

No. 3, 4, 4 1/2, 5, 5 1/2, 6-inch..... 1.05 per doz.

**Elbows and Shoes-**

Galvanized..... 60%

**Gasoline-**

See Petroleum Products.

**Iron, Sheet-Black.**

One Pass, C. R., R. G.  
Soft Steel, Cleaned.  
Nos. 14 to 16..... 3.25 3.30¢  
Nos. 18 to 21..... 3.35 3.40¢  
Nos. 22 to 24..... 3.45 3.50¢  
Nos. 25 and 26..... 3.55 3.60¢  
No. 27..... 3.65 3.70¢  
No. 28..... 3.75 3.80¢

**Russia, Planished, &c.**

Genuine Russia, accord-

ing to assortment..... 11 @ 14 ¢

Do, Stained..... 6 @ 10 1/2 ¢

Patent Planished, 1/2 A, 1 1/2 B, 10¢ net

**Galvanized.**

Nos. 14 and 16..... 3.40 @ 3.45¢

Nos. 18 and 20..... 3.45 @ 3.75¢

Nos. 22 and 24..... 3.95 @ 4.05¢

No. 26..... 4.20 @ 4.35¢

No. 27..... 4.50 @ 4.65¢

No. 28..... 4.80 @ 4.95¢

No. 30..... 5.95 @ 6.15¢

No. 20 and lighter, 36 inches wide, 25¢ higher.

**Lead-**

American Pig..... 4.45 @ 4 1/2 ¢

Bar..... 5 @ 5 1/2 ¢

Pipe..... 6 @ 2 1/2 ¢ off

Tin Lined Pipe..... 12 1/2 @ 20 ¢ off

Sheet Lead..... 7 1/2 ¢

Old Lead in exchange, 3 1/2 ¢ off

**Mitres Eave Trough-**

See Eave Trough Mitres.

**Nickel-**

Per lb..... 55 @ 60¢

**Paints, Oils &c.-**

**Leads-**

Lead, American White, in Oil:

Lots of 500 lb or over..... 6 1/4 @ 6 1/2 ¢

Lots less than 500 lb..... 6 1/2 @ 6 3/4 ¢

Lead, White, in oil, 25 lb tin

pails, add to keg price..... @ 1/2 ¢

Lead, White, in oil, 12 1/2 lb tin

pails, add to keg price..... @ 1 ¢

Lead, White, in oil, 1 to 5 lb as-

sorted tins, add to keg price..... @ 1 1/2 ¢

Lead, White, Dry in bbls..... 5 1/4 @ 6 ¢

Lead, Red, bbls, 1/2 bbls, and kegs:

Lots 500 lb or over..... @ 6 ¢

Lots less than 500 lb..... @ 6 1/2 ¢

**Oils-**

Linseed, City, raw..... 41 @ 61 1/2 ¢

Linseed, City, boiled..... 63 @ 63 1/2 ¢

Linseed State and West'n, raw 60 @ 60 1/2 ¢

**Spirits Turpentine-**

In Southern bbls..... 48 @ 48 1/2 ¢

In machine bbls..... 49 @ 49 1/2 ¢

**Putty-**

In bulk..... \$2.25

In bladders..... 2.25

In cans 12 lb to 25 lb..... 2.25

In cans 1 lb to 5 lb..... 3.25

**Petroleum Products-**

In Barrels (Barrel Included)

Stove Gasoline..... 11 1/4 @ 11 ¢

Kerosene..... 12 @ 13 ¢

**Pipe, Black Tin-**

Per lb..... 37 ¢

**Pipe Drain-**..... 40%

**Pipe, Spiral-**

See Conductors.

**Registers-**

List Sept. 2, 1901

Black Japanne..... 70%

White Jaanned..... 70%

Nickel Plated..... 70%

Bronze Finishes in Imitation of Gold.

Silver, Copper or Bronze..... 70%

Electroplated in Brass, Bronze or

Copper..... 70%

White Porcelain..... 60%

Solid Brass and Bronze Metal..... 50%

**Roofing Material-**

1 Ply Tarred Paper, 1/2 ton, \$31.00 @ 32.00

2 Ply Tarred Paper, 1/2 roll, 105 sq. ft., 55 @ 60 ¢

3 Ply Tarred Paper, 1/2 roll, 105 sq. ft., 80 @ 85 ¢

Slaters Felt..... 1 ton, \$35.00 @ 36.00

Roofing Pitch..... 1 bbl. \$2.50

**Rosin-**

Common and Good-Strainer.

Rosin, C. & D..... 1.57 1/2 @ 1.60

Rosin, E. & F..... 1.85 @ 1.72 1/2 ¢

Rosin, G. & H..... 1.75 @ 1.90

Rosin, I. & K..... 2.35 @ 3.00

Rosin, M. & N..... 3.35 @ 3.70

**Shoes and Elbows-**

See Elbows and Shoes.

**Slate Roofing-**

L. O. B. oars, Quarry Station.

According to size.

Pennsylvania:

Best Bangor, 1/2 sqr..... \$3.75 @ \$6.70

No. 1 Bangor Ribbon, 1/2 sqr..... 3.50 @ 3.75

Pen Argyle, 1/2 sqr..... 3.50 @ 4.50

Peach Bottom, 1/2 sqr..... 5.25 @ 6.35

No. 1 Chapman, 1/2 sqr..... 3.75 @ 4.75

No. 1 Penna. Black, 1/2 sqr..... 3.15 @ 4.15

Unfading Washington Bau-

gor, 1/2 sqr..... 3.00 @ 4.50

Vermont:

No. 1 Sea Green, 1/2 sqr..... \$2.25 @ \$3.50

Purple, 1/2 sqr..... 4.50 @ 5.00

Unfading Green, 1/2 sqr..... 4.25 @ 5.25

Red, 1/2 sqr..... 7.00 @ 11.00

Maine:

Brownville, Unfading Black

No. 1, 1/2 sqr..... \$5.25 @ 7.50

**Solder-**

1/2 lb guaranteed..... 19 @ 19 1/2 ¢

No. 1..... 19 1/2 @ 18 ¢

Prices of Solder indicated by private

brands vary according to composition.

**Soldering Fluids-**

Per Pound.

Concentrated Flux..... 4c

Eureka Flux..... 3c

Triple Strength..... 3c

Extra Concentrated..... 4 1/2 ¢

Crystal..... 7c

Gedney's Fluid..... 2c

Lennox Fluid..... 3c

Perfection Flux..... 3c

Yager's Salts, 1 lb. bottles, each, 50¢

1 lb. bottles, per lb., 45¢

**Soldering Coppers-**

Per lb..... 22 @ 24 ¢

**Spelter-**

Western Spelter..... 6 1/2 @ 6 3/4 ¢

**Spiral Pipe-**

See Conductors.

**Stove Pipe Elbows-**

See Elbows, Stove Pipe.

**Stove Trucks-**

See Trucks, Stove.

**Strainers, Conductor-**

Galvanized..... 50%

**Tin Pigs and Bars-**

Banca, pigs, 1/2 lb..... 28 1/4 @ 28 3/4 ¢

Straits, pigs, 1/2 lb..... 28 1/4 @ 28 3/4 ¢

Straits, in bars, 1/2 lb..... 28 1/4 @ 28 3/4 ¢

**Tin Plates American**

**Charcoal Plates, Bright-**

N. B.-The price of 20 x 28 sizes

double the price of 14 x 20.

Calland Grade:

IC, 14 x 20..... \$6.75

IX, 14 x 20..... 8.25

IXX, 14 x 20..... 9.50

IXXX, 14 x 20..... 10.75

IXXXX, 14 x 20..... 12.00

Melyn Grade:

IC, 14 x 20..... 6.25

IX, 14 x 20..... 7.75

IXX, 14 x 20..... 9.00

IXXX, 14 x 20..... 10.25

IXXXX, 14 x 20..... 11.50

Allaway Grade:

IC, 14 x 20..... 5.75

IX, 14 x 20..... 6.85

IXX, 14 x 20..... 7.95

IXXX, 14 x 20..... 9.05

IXXXX, 14 x 20..... 10.15

**Coke Plates, Bright-**

Bessemer

Steel, or

equal to J. IC, 14 x 20..... \$4.90 @ 5.00

B. Grade,

full weight

IX, 14 x 20..... \$6.00

N. B.-The reduction per box on lighter

Plates than IC, 14 x 20, is as follows:

100 lb..... 15¢

95 lb..... 20¢

90 lb..... 25¢

85 lb..... 30¢

**Terne Plates-**

N. B.-The following prices are for IC

20 x 28, the rate for 14 x 20 being half as

much. IX is usually held at \$2 per box

advance for 8 to 10 lb coating and \$2.50

to \$3 advance for 15 lb and upward.

About 40 lb coating..... \$16.00 @ 16.50

About 40 lb coating..... 15.25 @ 15.75

About 20 lb coating..... 13.25 @ 13.75

About 15 lb coating..... 11.25 @ 11.75

About 8 lb coating..... 9.50 @ 10.00

**Boiler Plates, American-**

IXX, 14 x 26..(112 sheets)..... \$12.50

IXX, 14 x 28..(112 sheets)..... 13.50

IXX, 14 x 31..(112 sheets)..... 15.00

**Troughs Eave-**

See Eave Trough.

**Trucks, Stove-**

Improved Lock Frame, per doz..... \$15.00

Steel Lock Frame, per doz..... 18.00

Daisy Improved pattern, 1/2 doz..... 18.00

**Tubes and Tubing-**

Brazed Brass, List June 6, 1898..... 40%

Copper and Bronze, 3c per lb. list more

than Brass.

Seamless Brass Tubes, net list Feb. 6,

1899

Tin..... 50%

Galvanized..... 50%

Fittings for do..... 40%

**Zinc-**

600 lb casks 1/2 lb..... 6 1/2 ¢

Per lb..... 7 1/2 @



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Gressel, Henry & Co., Chicago, Ill.  
International Heater Co., Utica, N. Y.

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Brand Stove Co., Milwaukee, Wis.

Brilen Heater Co., Hoosick Falls, N. Y.

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Floyd, Wells & Co., Roversford, Pa.

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Graff Furnace Co., 203 Water Street, New York.

Hart & Crouse Co., Utica, N. Y.

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Kelsey Heating Co., Syracuse, N. Y.

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- Sinks.**  
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Chattanooga Steel Roofing Co., Chat-  
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dence, R. I.
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St., N. Y.  
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Mass.  
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bridge, N. J.  
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waukee, Wis.  
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Marcy Stove Repair Co., 74 Beekman  
St., N. Y.  
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pairing Co., Newark, N. J.  
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Mich.  
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New York.
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New York.  
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town, Pa.  
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Cincinnati, O.  
Ohio Stove Co., Portsmouth, O.  
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burgh, Pa.  
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mouth, O.  
Quincy Fdry. & Novelty Co., Quincy,  
Ill.  
Richmond Company, Norwich, Conn.  
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and, O.  
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Mass.  
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- Water Heaters.**  
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- Wind Gates.**  
Miner & Peck Mfg. Co., New Haven, Ct.

SEE ALPHABETICAL INDEX, PAGE 66.

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|                                            |                                          |                                                       |                                                |                                               |
|--------------------------------------------|------------------------------------------|-------------------------------------------------------|------------------------------------------------|-----------------------------------------------|
| A. D. Mfg. Co..... 35                      | Clason, Arch. Metal Works.. 74           | Graff Furnace Co..... 11                              | Miller, Wm. Range & Furnace Co..... 8          | Schwab, R. J. & Sons Co..... 21               |
| Adee, Fred. & Co..... 35                   | Clayton & Lambert Mfg. Co.. 33           | Gray, G. L..... 68                                    | Co..... 8                                      | Schwerdtle Stamp Co..... 73                   |
| Adler, H. Co..... 10                       | Coe, Jas. A. & Co..... 77                | Gummey, McFarland & Co.. 75                           | Millers Falls Co..... 83                       | Shepard, Sidney & Co..... 29                  |
| American Blower Co..... 23                 | Colwell Lead Co..... 35                  | Gnnster & Forsyth..... 34                             | Milwaukee Pattern Works.. 32                   | Sheppard, Isaac A. & Co. .... 1               |
| American Furnace Co..... 18                | Cooney & Gelgr..... 72                   | Gurney Heater Mfg. Co ..... 17                        | Miner & Peck Mfg. Co ..... 31                  | Shields, W. H. & Co..... 31                   |
| American Galvanizing Wks.. 73              | Cope, Geo. W ..... 32                    | Harrington & King Perforating Co..... 66              | Monarch Stove & Mfg. Co... 7                   | Smith, H. B. Co..... 12                       |
| American Radiator Co..... 15               | Cortright Metal Roofing Co.. 77          | Hart & Cooley Co..... 27                              | Monash-Younger Co..... 33                      | Smith & Anthony Co..... 84                    |
| American School of Correspondence..... 69  | Cory, Uzal & Co ..... 28                 | Hart & Crouse Co..... 16                              | Moncrief F'ce & Fdry. Co... 25                 | Smith & Thayer Co ..... 22                    |
| American Sheet Steel Co... 1&76            | Crosby Steam Gage & Valve Co..... 1      | Heath, C. C. & Co..... 32                             | Montross Metal Shingle Co.. 77                 | Somerset Stove Fdry. Co..... 9                |
| American Steam Gage & Valve Mfg. Co..... 1 | Curtis & Curtis Co..... 34               | Helios-Upton Co..... 22                               | Morgan & Co..... 33                            | Sommer's, John Son..... 1                     |
| American Steel Roofing Co.. 73             | Dangler Stove & Mfg. Co.... 6            | Hessler, H. E. Co..... 28                             | Mott, J. L. Iron Works..... 22                 | Special Notices..... 68                       |
| American Tin Plate Co. .... 76             | Danzer Metal Works ..... 81              | Hoffman, Geo. W..... 32                               | Muelier, L. J. F'ce Co. .... 17                | Sperry, D. R. & Co..... 72                    |
| Anderson Coupling Co..... 34               | Day Metallic Mfg. Co..... 34             | Home Stove Co..... 9                                  | Mullins, W. H.... 80                           | Stamford Foundry Co ..... 11                  |
| Asphalt Ready Roofing Co .. 77             | Dietz, R. E. Co..... 70                  | Howes, S. M. Co..... 10, 29&32                        | Munsell, E. & Co..... 32                       | Steel & Iron Aluminum Coating Co..... 75      |
| Auer Register Co..... 20                   | Dighton Furnace Co..... 21               | Howson & Howson ..... 71                              | National Enameling & Stamping Co..... 36       | Stiles & Parker Press Co..... 82              |
| Ayling Bros..... 32                        | Dixon, Jos. Crucible Co..... 74          | Huhbell, Harvey..... 35                               | National Pipe Bending Co. . 9                  | Stocking, E. B..... 71                        |
| Baker L. B. Mfg. Co..... 29                | Double Truss Cornice Brake Co..... 80    | Ideal Register Co..... 27                             | New York Iron Roofing & Corrugating Co..... 73 | Stolz, Frank D..... 23                        |
| Barstow Stove Co..... 84                   | Drake, W. H..... 9                       | Independent Register Co.... 29                        | New York Trade School. .... 68                 | Stowell Mfg. Co..... 80                       |
| Beckwith, P. D., Est. of..... 2            | Drake & Mills..... 70                    | International Correspondence Schools..... 68          | Niagara Machine & Tool Wks 81                  | Swaine, F. J. Co..... 82                      |
| Berger Bros. Co..... 74                    | Drels, Andrews & Krump. . 80             | International Heater Co..... 3                        | O'Halloran & Jacobs..... 73                    | Swett, A. L. Iron Works.... 23                |
| Berger Mfr. Co..... 78                     | Dronye, G. Co..... 81                    | Janney, Steinmetz & Co..... 74                        | Ohio Stove Co..... 7                           | Taylor & Boggs Fdry. Co... 24                 |
| Bergstrom Bros. & Co..... 8                | Edwards, J. H..... 32                    | Jenkins Bros..... 1                                   | Ohl, Geo. A. & Co..... 82                      | Taylor Co., N. & J..... 84                    |
| Bertsch & Co..... 82                       | Edwards Mfg. Co. .... 78                 | Johnson, E. J. & Co..... 73                           | Osborn, J. M. & L. A ..... 79                  | Toledo Mch. & Tool Co..... 80                 |
| Best Light Co..... 29                      | Eilers, J. H. & Co..... 79               | Joliet Stove Works..... 5                             | Ostrander, W. R. & Co... .. 71                 | Trane, Jas. A. Vacuum Heating Co..... 68      |
| Bibb, B. C. Stove Co..... 28               | Energy Elevator Co..... 72               | Keene, Geo. C. & Co..... 83                           | Patric Furnace Co..... 17                      | Tribune Adjustable Stove Pipe Mfg. Co..... 29 |
| Bickelhaupt, G. Skylight Wks 77            | Evans Stamping & Plating Co 24           | Kelsey Heating Co..... 36                             | Peck; Stow & Wilcox Co.... 81                  | Froy Nickel Works ..... 30                    |
| Bliss, E. W. Co..... 82                    | Excelsior Steel Furnace Co.. 26          | Kemp, C. M. Mfg. Co..... 34                           | Peck-Williamson Co..... 20                     | Tubular Heating & Ventilating Co..... 24      |
| Blodgett, G. S. Co..... 23                 | Excelsior Tool & Mch. Wks.. 82           | Kewanee Boiler Co..... 18                             | Peil, John Enameling Wks.. 29                  | Valentine, M. D. & Bro. Co.. 31               |
| Bonnot Co..... 27                          | Falkenau-Sinclair Mch. Co. 81            | Kieley & Mueller..... 1                               | Penn Metal Ceiling & Roofing Co..... 74        | Vedder Pattern Works..... 32                  |
| Boss Washing Machine Co... 71              | Fanner Mfg. Co..... 33                   | Koven, L. O. & Bro..... 34                            | Perkins, J. L. & Co.... 72                     | Vogel, William & Bros.... 71                  |
| Boynton Furnace Co..... 18                 | Feun, Geo. E..... 72                     | Kramcr Bros..... 22                                   | Pierce, Butler & Pierce Mfg. Co..... 23        | Walte, Raulet & Co..... 83                    |
| Brand Stove Co..... 15                     | Floyd, Wells & Co..... 16                | Lalace & Grosjean Mfg. Co. 70                         | Pittsburgh Stove & Range Co 4                  | Walker & Pratt Mfg. Co. . 21                  |
| Bray, J. & Co..... 73                      | Foliansbee Bros. Co..... 1               | Lawless, John H..... 32                               | Portsmouth Stove and Range Co..... 4           | Walworth Mfg. Co..... 1                       |
| Bridgeport Crucible Co..... 31             | Forest City Fdry. & Mfg. Co. 23          | Lawrence-Letts Elbow Co... 30                         | Preshrey Stove Lining Co... 31                 | Washburne, E. G. & Co.. 72&79                 |
| Brien Heater Co..... 23                    | Foster, J. W. Mfg. Co..... 35            | Lennox Manufacturing Co.. 25                          | Quincy Fdry. & Novelty Co. 10                  | Waterbury Brass Co..... 1                     |
| Bruce & Cook..... 77&84                    | Frاند, Martin J. & Co..... 79            | Littleford Bros..... 80                               | Rasner & Dinger Co..... 74                     | Weir Stove Co..... 84                         |
| Buffalo Forge Co..... 72                   | Friedley & Voshardt..... 78              | McClure & Co..... 84                                  | Richmond Co..... 13                            | Weiss, H. & Co..... 83                        |
| Burgess Soldering Furnace Co..... 35       | Frink, L. P..... 84                      | McLeod & Henry Co..... 31                             | Robinson, J. M. & Co. .... 83                  | Whaley-Totten Co..... 74                      |
| Burton, W. J. & Co.... 29                  | Fuller & Warren Co..... 1                | McSherry, Chas. .... 81                               | Rochester Radiator Co..... 27                  | White, Warner Co..... 27                      |
| Callahan, Geo. & Co..... 33                | Galesburg Cornice Works... 79            | March-Brownhack Stove Co. 15                          | Rutland Fire Clay Co..... 30                   | Willard, Wm. G..... 28                        |
| Canton Machine & Mfg. Co.. 83              | Galt, John & Sons..... 73                | Marcy Stove Repair Co... 31                           | St. Louis Enameling Co..... 8                  | Williams Stove Lining Co.. 30                 |
| Canton Steel Roofing Co..... 79            | Genuine Bangor Slate Co... 73            | Marston, I. G. & Co..... 34                           | Salem Nail Co..... 73                          | Wlster, L. & R. & Co ..... 84                 |
| Castle, Wilmot & Co..... 26                | Giblin & Co..... 14                      | Matthews, H. A. Mfg. Co.... 26                        | Saunders, D. Sons ..... 34                     | Wood, Alan Co..... 77                         |
| Chattanooga Steel Roofing Co..... 81       | Glessel, Henry & Co..... 35              | Metropolis Sheet Metals & Stove Repairing Co. .... 25 | Schneider & Trenkamp Co.. 6                    | Wood & Bishop Co..... 25                      |
| Cincinnati Stamping Co..... 77             | Globe Iron Rfg. & Corrugating Co..... 77 | Meurer Bros. Co..... 75                               | Schrawiesers Metal Lath Works..... 74          | Young, Jos. H ..... 32                        |
| Clark, Geo. M. & Co..... 19                | Globe Ventilator Co..... 72              | Meyer, F. & Bro. Co..... 20                           |                                                |                                               |
| Clark, Henry N. Co..... 26                 | Gobelle Pattern Co..... 32               | Millar, Chas. & Son Co..... 84                        |                                                |                                               |
| Clark Novelty Co..... 72                   | Gordon, W. J..... 83                     |                                                       |                                                |                                               |
| Clark, Quten & Morse..... 79               | Gorton & Lidgerwood Co. .... 1           |                                                       |                                                |                                               |



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A1 WORKING FOREMAN in jobbing department tinware factory; must be well recommended. "Box," care *The Metal Worker*, New York. Aug. 30

First-class TINNERS for inside and outside work; steady work the year round for first-class mechanics; no strike; wages, 30 cents per hour. Philip Christmann & Sons, Buffalo, N. Y. Aug. 30

Good TINMAN. Tracy Brothers, Ballston Spa, N. Y. Aug. 30

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Several good SHEET IRON WORKERS as road mechanics; those used to blow pipe work preferred; state wages expected, age and where last employed. Apply the Ohio Blow Pipe Company, corner Seneca and Michigan streets, Cleveland, Ohio. Aug. 30

A PATTERN MAKER familiar with block patterns and flask making; also a filer and fitter. The Ohio Foundry Company, Steubenville, Ohio. Aug. 30

A fine opportunity for a steady, sober and industrious man; must be a first-class mechanic and pattern cutter; to act as WORKING FOREMAN in a modern and up to date shop; class of work done, heating, ventilation and blow pipe work; one accustomed to these branches preferred; state qualifications, age and wages expected; immediate engagement expected. The Ohio Blow Pipe Company, 54 Michigan street, Cleveland, Ohio. Aug. 30

Boy wanted with one year's experience at tinsmithing. D. I. O'Brien, 1229 Fifth avenue, Brooklyn, N. Y. Aug. 30

## SITUATIONS WANTED.

By an A1 Boston PLUMBER, first-class on lead, iron and brass; can do furnace, hot water, low pressure steam, roofing and general all around work; have first-class references; married and wish steady work; state wages; within a radius of 15 miles of New York City. J. A. Reber, 30 North avenue, Cranford, N. J. Sept. 6

PLUMBER wants steady work; city or country; licensed New York; all around man; have had charge of work, also of shop; will work for shop, builder or estate; not afraid of work; quick, honest and sober. John Murray, 71 West Ninety-sixth street, New York. Sept. 6

By a young, single, sober and steady man as TINSMITH and GENERAL JOBBER at roofing, gutters, spouting, steam heating, pump and iron pipe work; ten years at the trade; wages \$11 per week for permanent position; references. "T. G. S.," Unionville, Conn. Sept. 6

An all around man, with ten years' experience in plumbing, furnace and sheet metal work, is open for engagement in the Pacific Coast States; can estimate and figure from plans; age 27; strictly temperate; transportation from Minneapolis required; if you are in need of this kind of a man write immediately. "W. G.," care *The Metal Worker*, New York. Sept. 6

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By reliable man as TINSMITH and ROOFER, inside and outside work; also sheet iron work; steady position; also do gas fitting and repairing of stove work; sober man; 16 years in the business. Barry Marcus, 55 Forsyth street, New York. Sept. 6

By a good workman on heating, ventilating and blow pipe work. John J. Kelly, 259 Kingsland avenue, Brooklyn, N. Y. Sept. 6

By man, 30 years old, married; 15 years as sheet metal worker, cornice and sheet metal draftsman, skylight maker, estimator and solicitor; also hot air furnace work, steel ceilings and good in mensuration; would accept reasonable proposition with right party; references if desired. Otis H. Reed, care Mary E. Reed, Chrisman, Ill. Sept. 6

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By a DIE and SHEET METAL TOOL MAKER, with several years' experience in the household cooking utensils and merchant ware lines; experienced on black ware for enameling plain and decorated tin ware dies, tools, &c. Box 85, care *The Metal Worker*, 1205 Fisher Building, Chicago, Ill. Sept. 6

By an experienced SALESMAN in a stove store and jobbing shop; understand all branches of trade; very best reference. "Trade," care *The Metal Worker*, New York. Sept. 6

To correspond with a first-class sheet metal house or manufactory, by a competent and experienced TRAVELING SALESMAN who is now representing a large Western house in the line mentioned; none but people who can entertain large tonnage contracts in black and galvanized sheets and tin plate will be considered; I am fully in touch with the largest consumers in this line; my sales record is open to inspection at all times to those interested; bank references furnished as to character and habits. "Compete," care *The Metal Worker*, New York. Sept. 6

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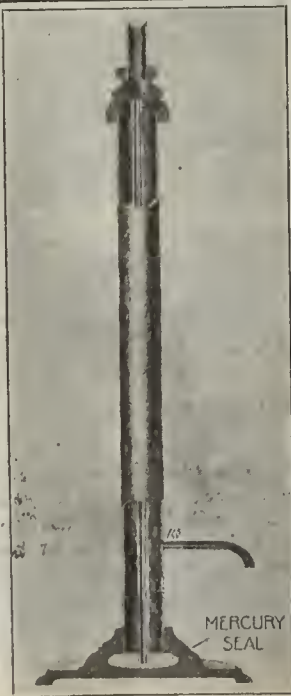
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| Architect               | Steam Engineer         |
| Contractor and Builder  | Civil Engineer         |
| Sign Painter            | Hydraulic Engineer     |
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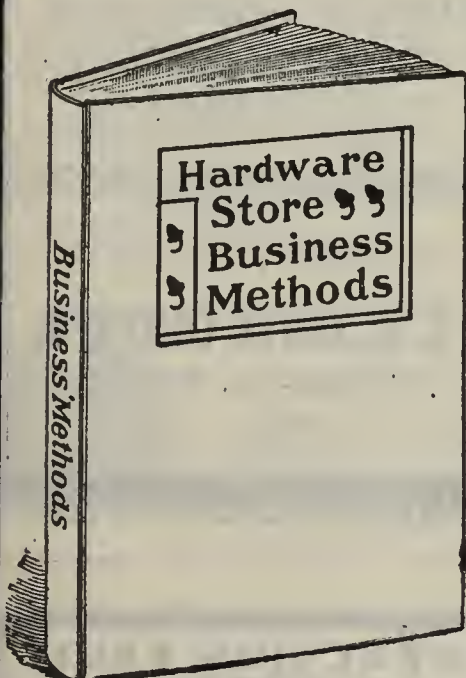
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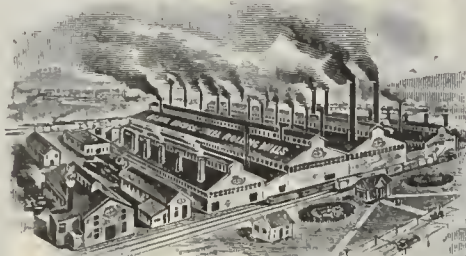
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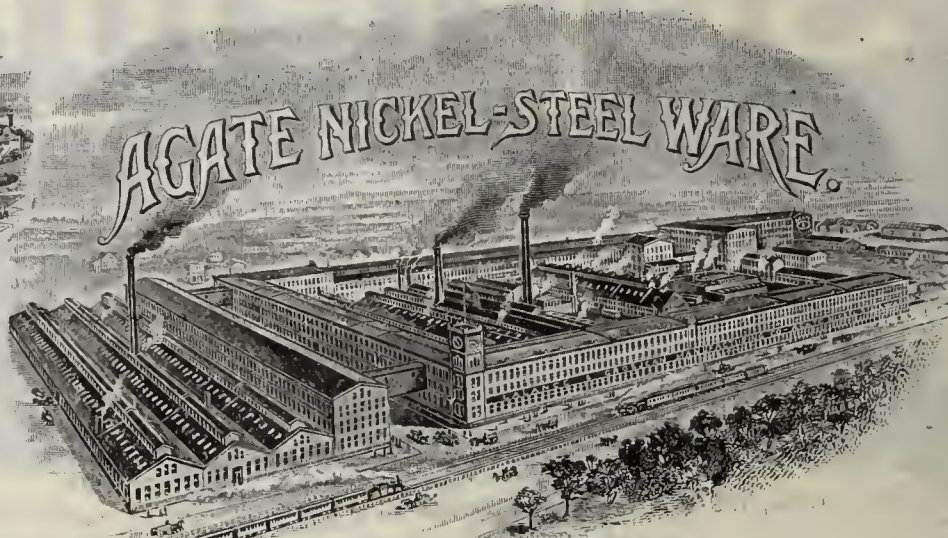
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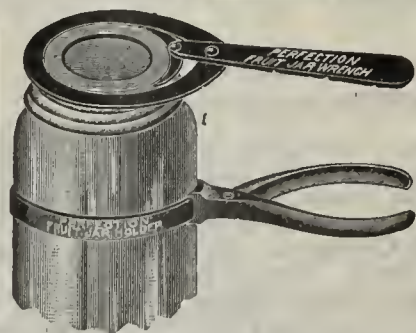
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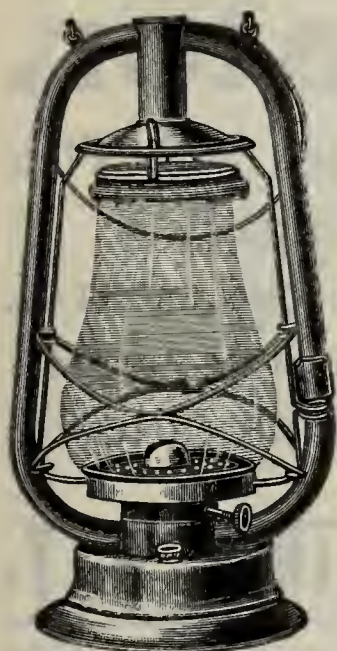
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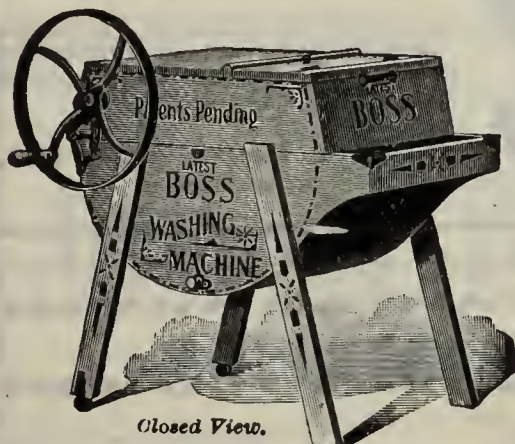
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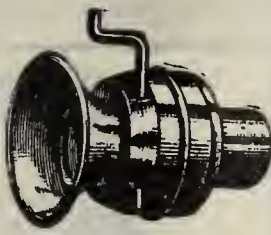
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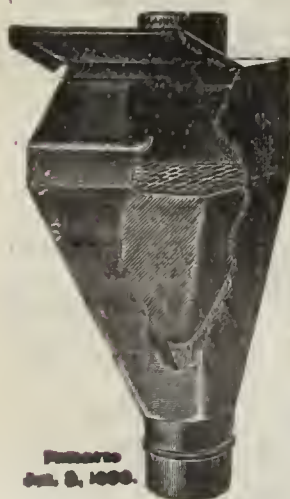
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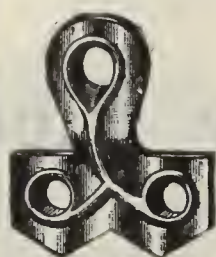
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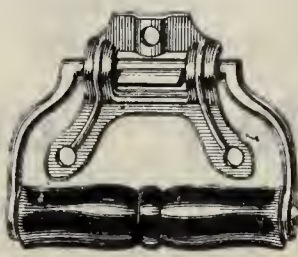
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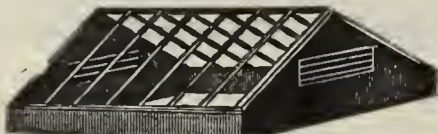
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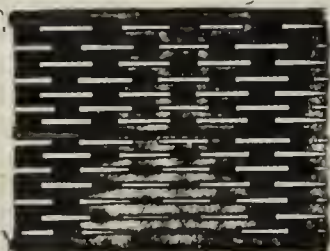
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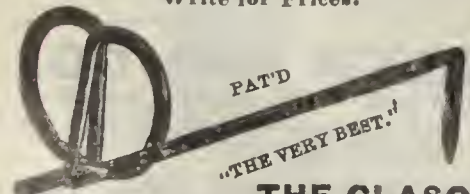


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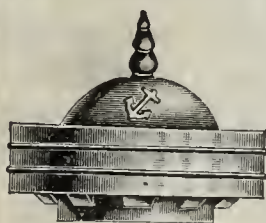
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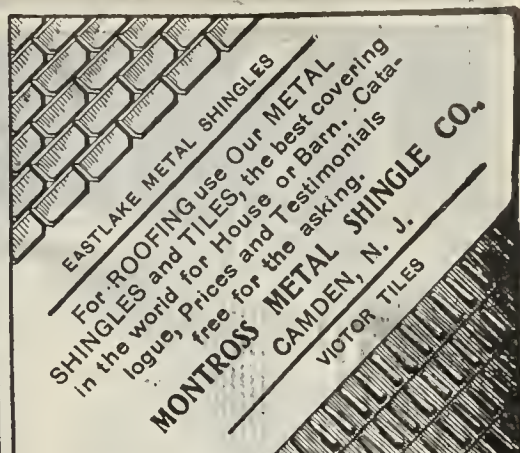
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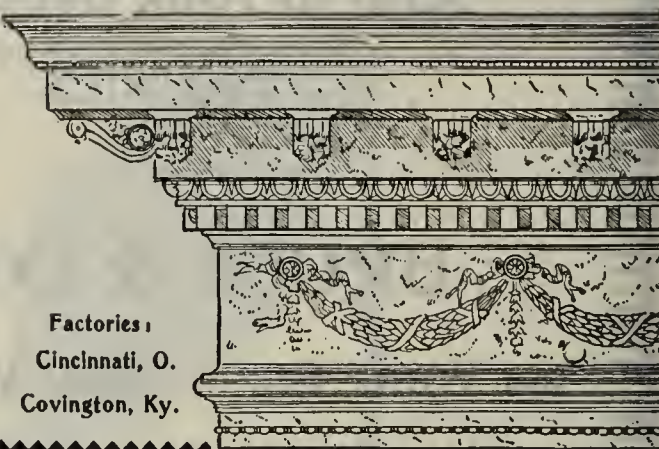
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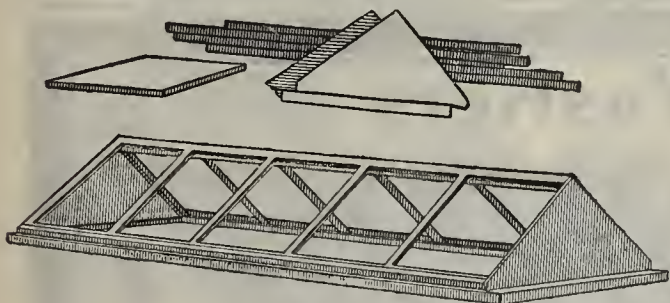
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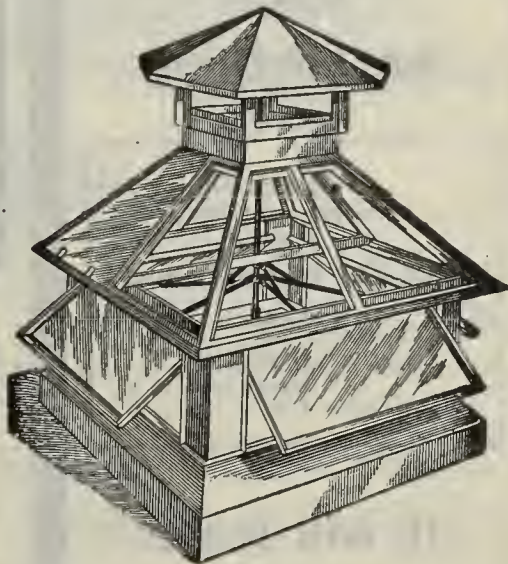
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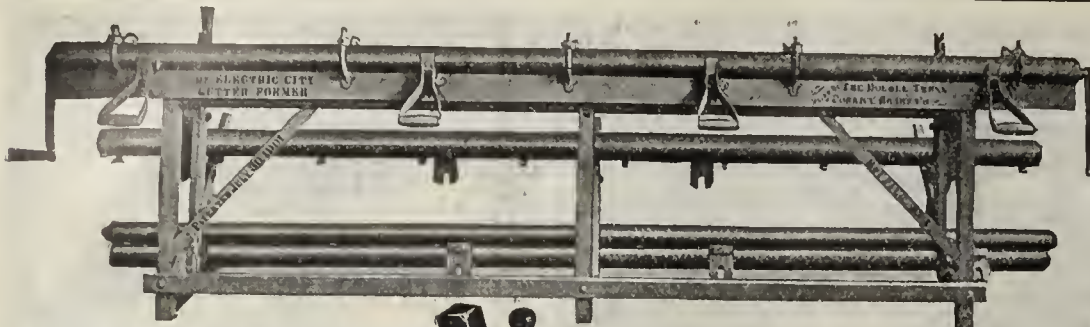
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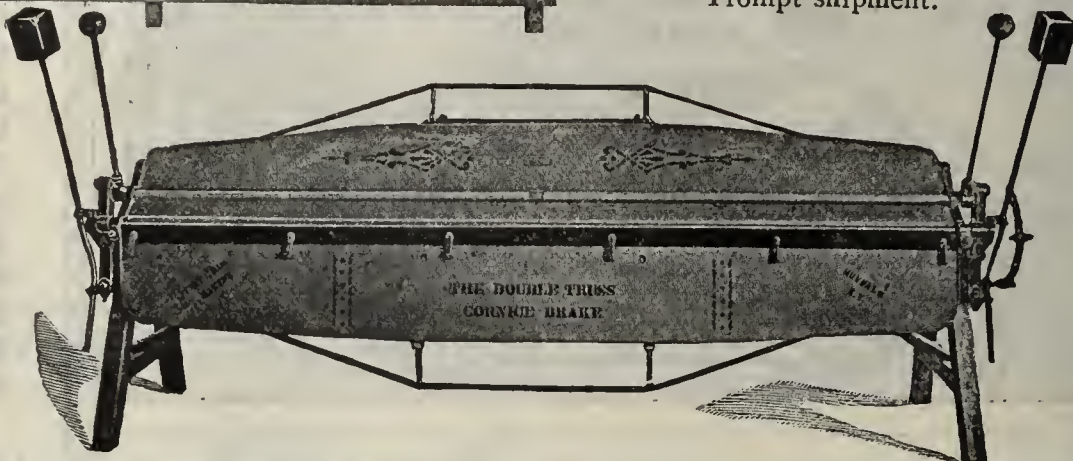




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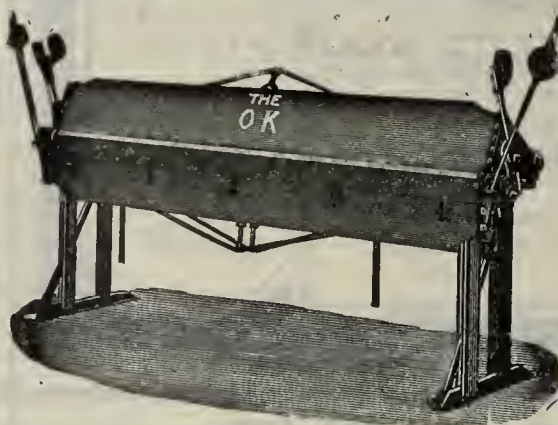
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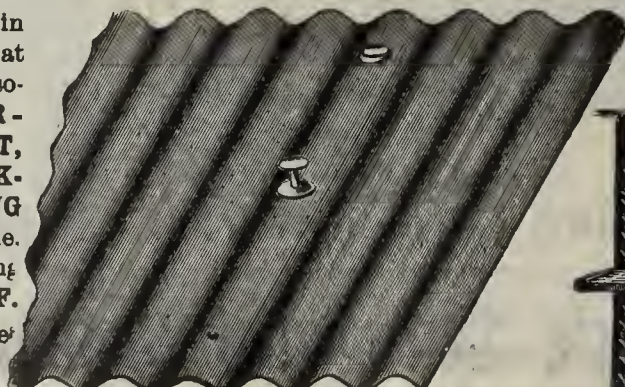
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TIGHT JOINT,**  
**PREVENT LEAK-  
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at the nail hole,  
thereby prolonging  
the life of a **ROOF.**

Send for sample  
and prices.



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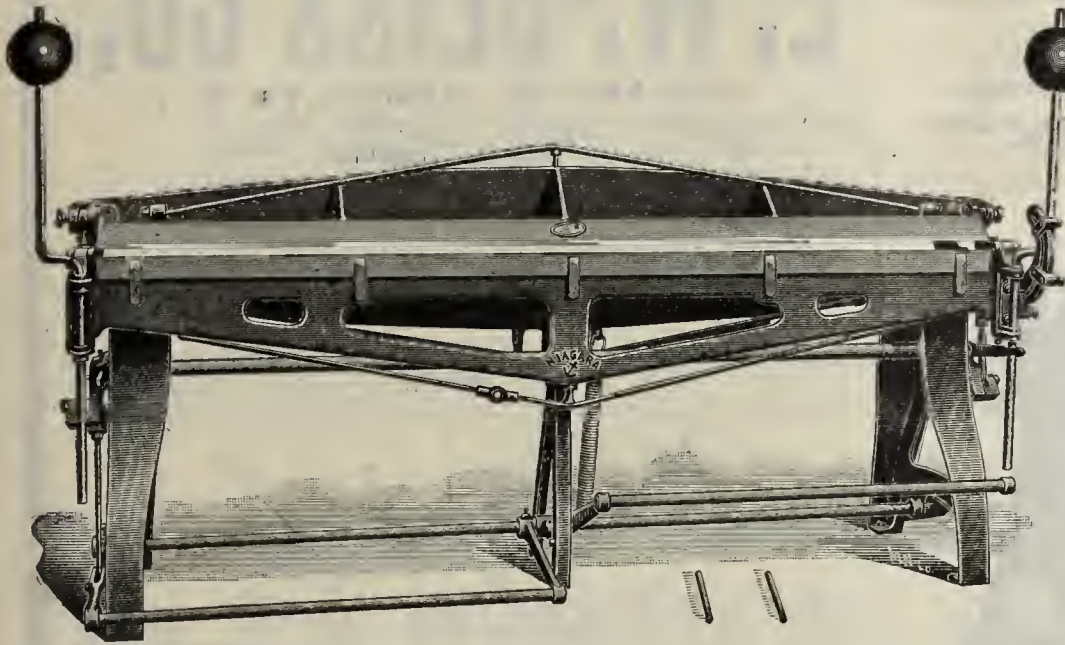
453-55-57 Pearl Street,

CINCINNATI, O.

Actual size of  
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# THIS IS AN ALL IRON BRAKE



Length, 8 feet, well adapted to the ordinary work of cornice makers, easily handled and properly proportioned, without surplus material.

MADE BY THE

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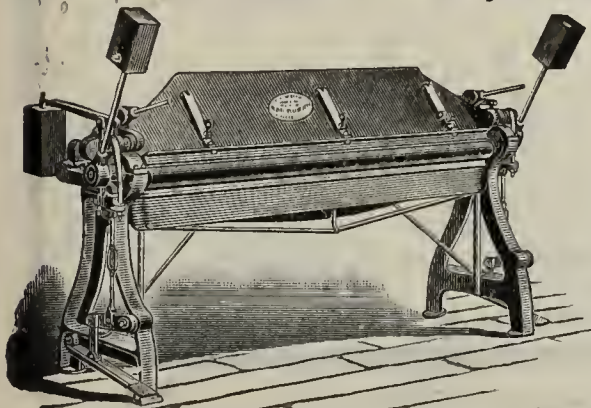
Mfrs. of Sheet Metal Tools

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**Tinsmiths' Tools  
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Highest Grade.**



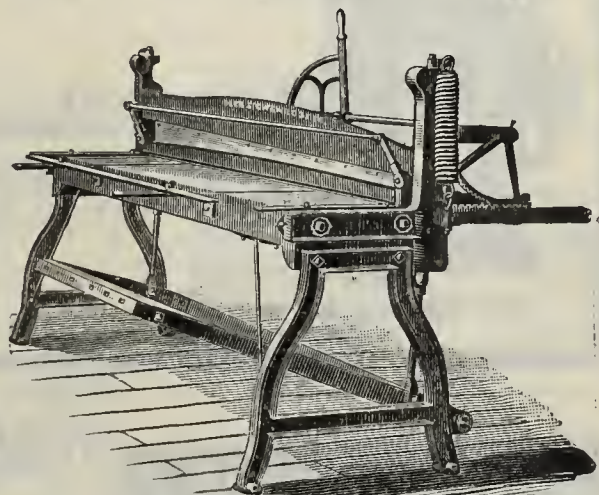
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Our *Improved Eureka Cornice Brake.* Will bend No. 20 iron.

96 inches long.



**CORNICE MAKERS' SQUARING SHEARS.** With Lever Arc, Automatic Gauge. Will cut No. 2 iron 97 inches long.

## HERCULES SHEARS

make the cutting of sheet metal of heavy gauges an easy task for the mechanic and a profitable operation for the employer. With them a man can cut No. 12 steel with one hand on the lever, leaving the other hand free to guide the stock while cutting elbows, flanges and circles, as small as 8 inch radius; this is done without burring or buckling either piece, thus avoiding hammering and straightening, which add to the cost of the product. They split sheets of any width or length up to No. 12 gauge, cut wire or bar-steel  $\frac{1}{2}$  inch thick, cut off and mitre angle iron  $\frac{1}{2}$  inch thick, and do it perfectly.

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Capacity, Foot Power 7 min. to a box; Hand Power 10 min.

Built in two sizes, 21 and 31 inches wide, for hand, foot and belt power.  
It will edge 27 iron and tin for roll or flat seam roofing.

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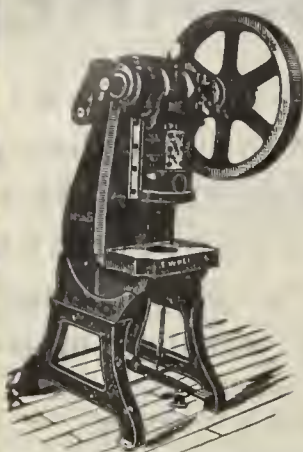
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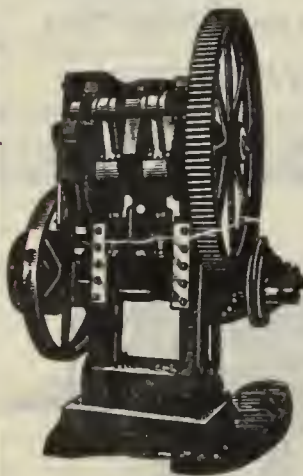
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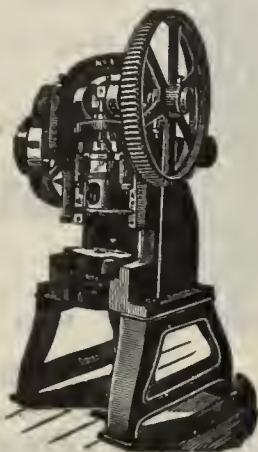
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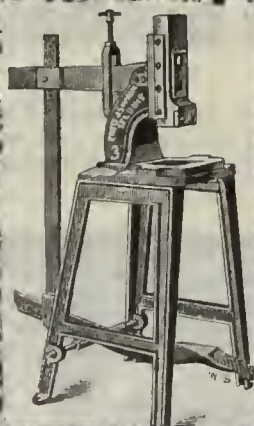
Correspondence Solicited.

Estimates Furnished.

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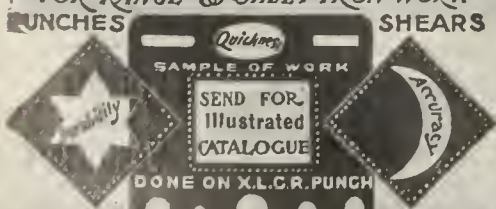
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Punches, Presses,  
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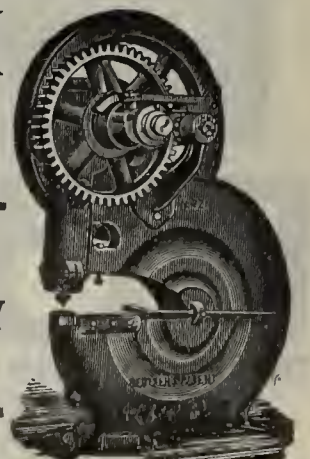
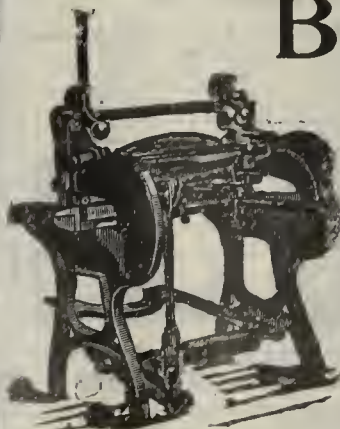
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Send for illustrated descriptive circulars and prices.

**Agents: MERCHANT & CO., Philadelphia, Pa.**



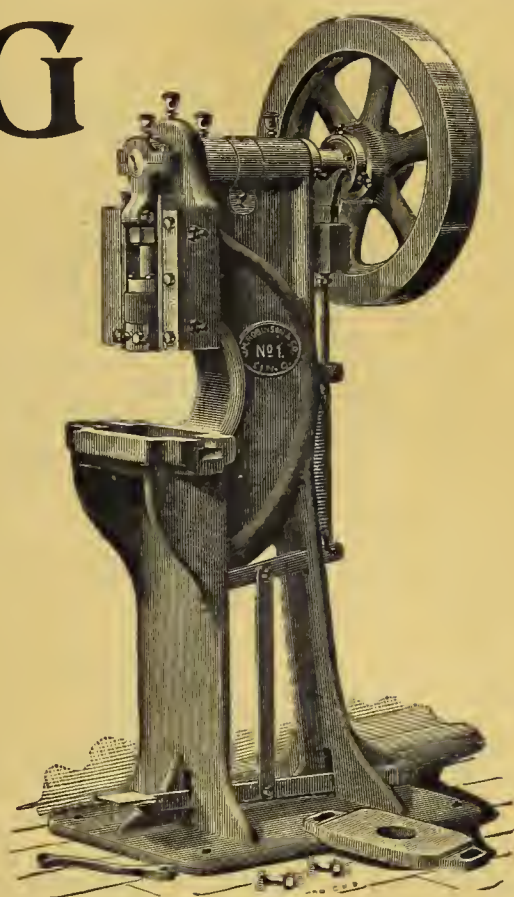
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## Sheet Metal Working Machinery

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### KEENE FOOT POWER CORNICE BRAKE.

Easiest to Operate.  
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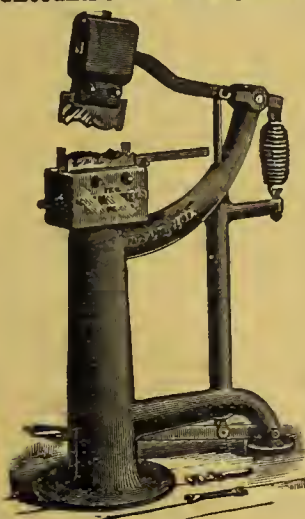
SHEET METAL WORKING  
MACHINERY OF ALL KINDS.



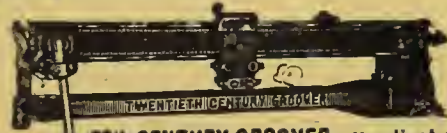
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The cheapest, most convenient and best sheet metal moulding former ever offered. Produces a greater variety of work than any other. Quickly adjusted and easily operated. Write for prices and discounts on this or any sheet metal working tool you may desire. We will name you bottom prices.



20th Century Groover  
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Operated from one position. Automatic knock-out and Quick Return. Grooves 22 gauge.  
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### IMPROVED Patent Automatic Can Body Double Lock SEAMING MACHINES

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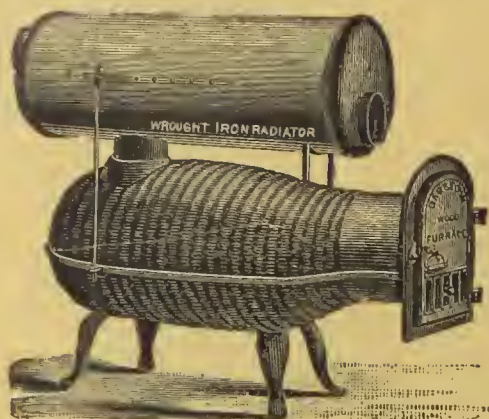
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which usually goes to waste about the farm  
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is the only brand  
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in the same way  
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Roofs of this tin  
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Dealers in all kinds of Iron and Steel Scrap.

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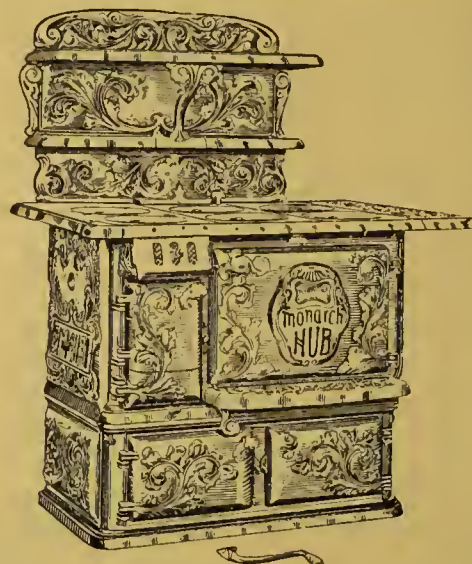
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Superior in  
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A WEEKLY JOURNAL OF THE  
**ROOFING, CORNICE, TIN, PLUMBING AND HEATING TRADES.**

With which is Incorporated The Stove and Tin Trade Journal, the Sheet Metal Builder, and Metal.

LVIII.  
 SEP. 11.

NEW YORK AND CHICAGO, SEPTEMBER 13 1902.

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With Hill's Solid Dies  $\frac{1}{8}$  to 3 inches.  
 Especially adapted for Threading Wrought-Iron  
 Pipes in Cramped Positions, as in Trenches, or in  
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Common galvanized  
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If the appearance of a stove appeals to the  
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All working parts renewable without taking the valve  
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Perfectly tight under all pressures of steam, oils or acids.  
 Warranted to give satisfaction under the worst conditions.

Received the  
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At the Pan-Amer-  
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Insist on having the genuine stamped with Trade-Mark.

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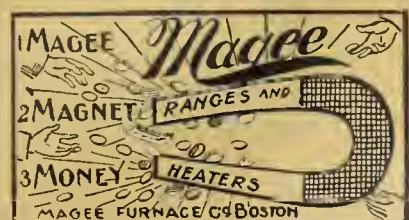
When you see these Trade Marks  
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## Steam Specialties

THAT SPEAK FOR THEMSELVES.  
 Pump Valves for  
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## Standard of America

The Manse.  
**FIRST PRESBYTERIAN  
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After using the Round Oak  
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 I want to testify to its merits  
 Mr C. T. Jester, our local dealer,  
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 All those who saw the furnace  
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 because of its size  
 and it was with fear and  
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 I have been agreeably surprised.  
 We have heated  
 one-third more space  
 than I did last winter  
 and my coal bill has been  
*less than half.*  
 No praise for the  
 Round Oak furnace  
 can be too strong.

Yours truly,  
 Rev. T. S. Rush.

Economy, that is what we  
 preach, and guarantee the  
 Round Oak to prove. Think you  
 could sell the highest class  
 furnace manufactured, in your  
 territory? if so, communicate.

*Estate of*  
**P. D. BECKWITH**

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*Makers of Good Goods Only*



*Perchance a lynx, or a marten, an otter or  
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 pelts into "furs" to keep him warm.*

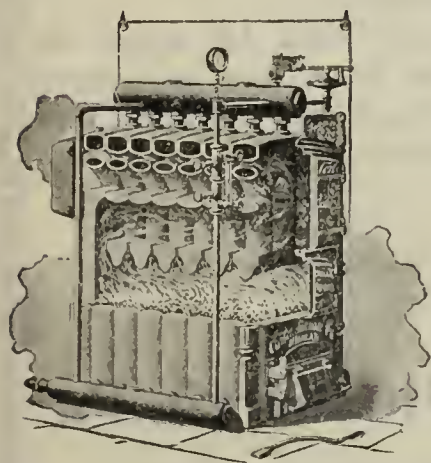


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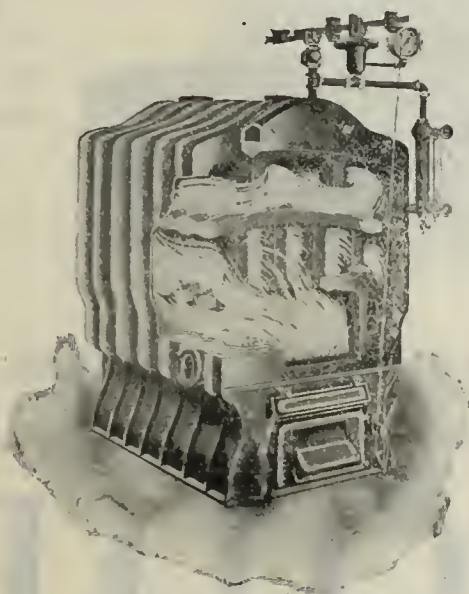
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# STEAM and HOT WATER HEATERS, Furnaces and Combination Heaters

That embody Superior Merits?



Carton "A" Boiler



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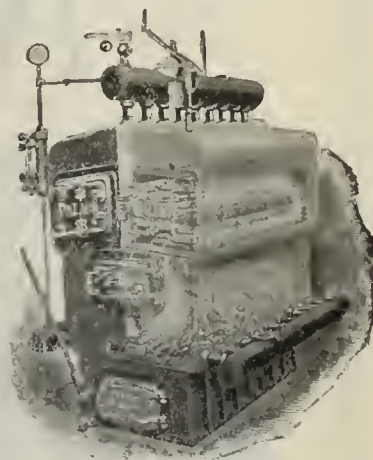
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LARGEST MAKERS OF HEATING AND LIGHTING APPARATUS IN THE WORLD,

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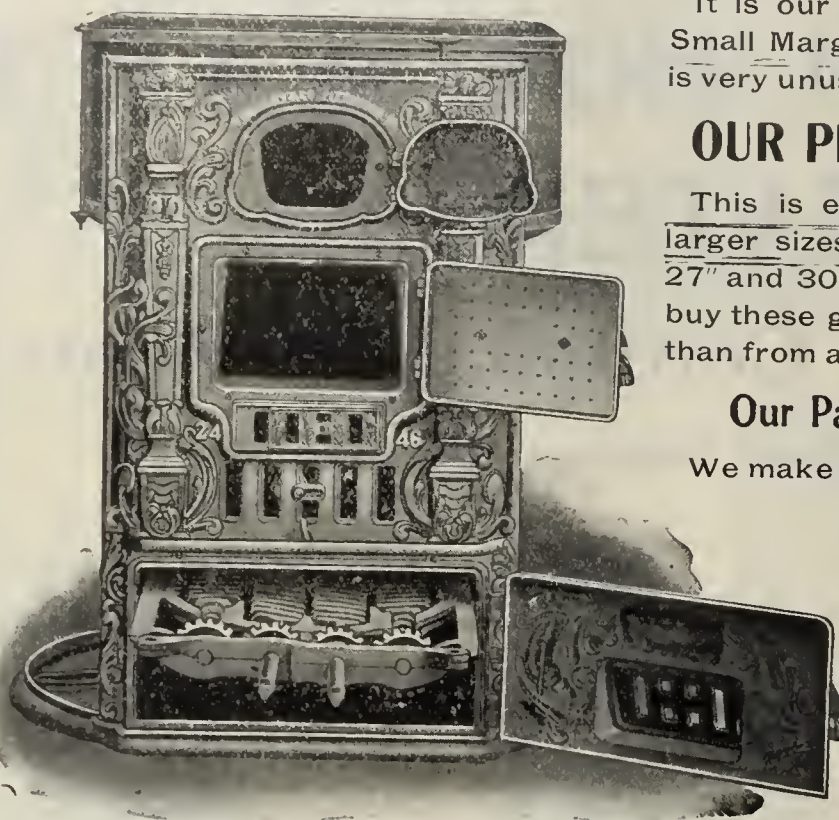
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Northwestern Agents: Engineering, Steam & Supplies Company, Minneapolis, Minn.



## The Pittsburgh Plan of Pricing Furnaces. Saves You Money. Brings Us Business.



It is our policy to Sell Furnaces on the Same Small Margin of profit that we do Stoves. This is very unusual in the Furnace trade and it makes

### OUR PRICES VERY ATTRACTIVE.

This is especially true of our prices on the larger sizes of Furnaces, say those having 24", 27" and 30" Firepots. We believe that you can buy these goods from us to a better advantage than from any other maker.

### Our Patterns Are All "Up-To-Date."

We make several complete lines and can meet every requirement.

WE MAKE THEM AS WELL AS WE KNOW HOW and we believe that a sample will convince you that We Know How.

*Catalogues Are Ready.*

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## Wrought Steel Ranges

FOR 1902-03.

**Best on Earth.**

**Price is Right.**



Have you examined the Fire Box on the Model Line? Have you seen our Patented Oven Door, which does so much to popularize the Model Line with the Trade and Customer? Then there is "the Long Felt Want" kind of Damper, to say nothing of the Oven Construction. These are only a very small portion of the "Special Features" embodied in the Model Line. In the construction nothing but the very best material and mechanical skill attainable is made use of.

Space will not permit of but the briefest description, so send for

**CATALOGUE 10.**

**THE PORTSMOUTH STOVE & RANGE CO.  
PORTSMOUTH, O.**

MORLEY BROS., Wholesale Agents for Michigan, Saginaw, Mich.

The Busiest Makers of Stoves and Ranges in the World.



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Here's a New One, the "Empire"

(Empire State People, take notice)



See that nickel band! She can lift it off!

The bands on hearth and oven shelf come off, too

This is our latest idea; got a good strong patent on it; it is helping Crawford agents to double their sales. "Empire" helps in cooking are: The single damper, an excellent selling-feature; the easily-repaired-even-when-warped dockash grate; the truth-telling heat indicator; the cup joint flues; the asbestos oven lining; the useful simmering cover, and there are others.

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REMOVABLE SKIRT

The handsomest and best  
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country.

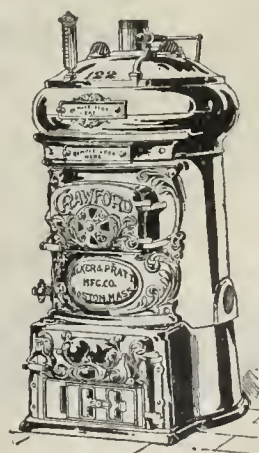
13, 15, 18 inch.

#### THE CRAWFORD BOILER

People speak well of  
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HONEST RATINGS

Square sectional boilers  
also



WALKER & PRATT MFG. CO., BOSTON

FINEST STOVE FACTORY IN THE WORLD





# Moore's Ranges



THE PRIDE OF THE BRIDE—A new home completely furnished with every convenience is sure to have A MOORE'S STEEL RANGE in the kitchen. Not only the reputation of these ranges with previous users, but their neat attractiveness and handiness—which appeal to both the eye and the good sense of the buyer—insure this selection.

—The illustration is from a home recently furnished with Moore's Premium No. 268 Reservoir and Closet.

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## "UNION MADE"

# STEEL RANGES

We have combined all the latest improvements, such as Large Feed Door, Duplex Grates which can be removed without disturbing the linings or waterfront, Large Ash Pit Door, and Deep Ash Pan, which is so arranged that it catches all the ashes. The Smoke Box is made of cast iron, as also the Enamelled Reservoir and Reservoir Casing, which is one of the very important features in Steel Range building, as experience has shown that the dampness from the reservoir soon rusts out the heretofore sheet iron flues or casing. The Fire-box Linings are sectional. The Ovens are thoroughly braced, and the Bodies are fully lined with asbestos Mill Board protected with an inner plate and are boiler-riveted throughout.

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Stock Complete. Prompt Shipments Guaranteed

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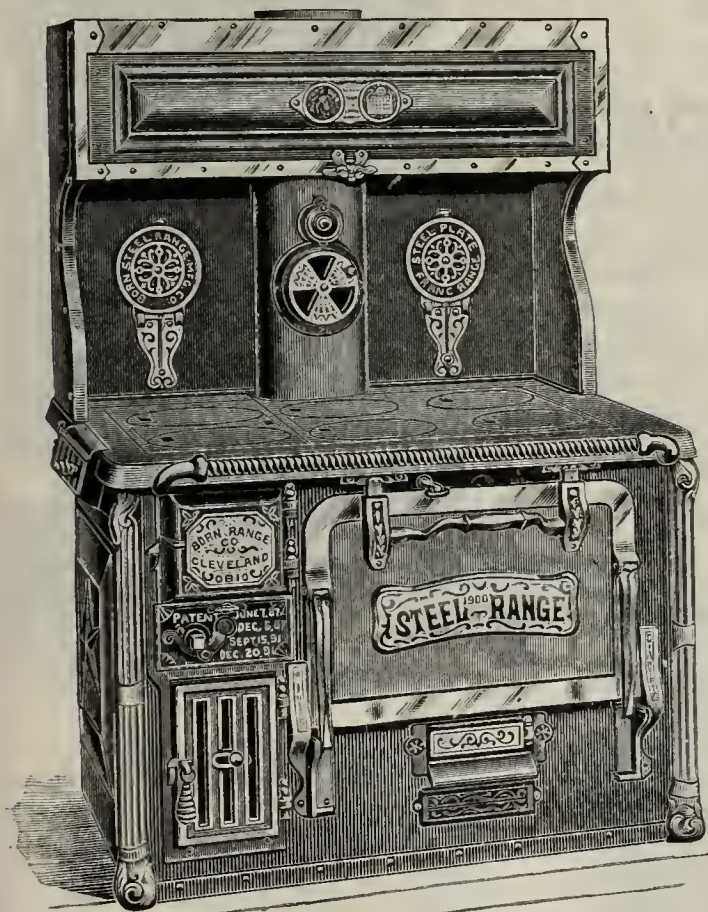
"Good Will" and "Omaha"

Stoves, Ranges, Repairs, Etc.

CINCINNATI, OHIO

The Vital Points  
have been carefully looked  
after in building

# BORN STEEL RANGES



**SIDE WALLS**—Double steel plate interlined with asbestos to insure durability and retain heat.

**OVEN BOTTOM**—Removable, extra heavy steel plate, guaranteed to remain level.

**OVEN DOOR**—Hinged on malleable iron to prevent breaking in use.

**FLUES**—Back flue is cast iron and will not rust out or crack.  
Top flue shielded at both sides with cast plates to protect the joints between walls and oven.  
Bottom flue double asbestos lined to keep heat from floor and improve baking.

**CASTINGS**—Extra heavy, from patterns designed to prevent warping and cracking.

The **Born Steel Range Company**  
CLEVELAND, OHIO.

Write for Catalogue and Prices.

WHOLESALE AGENTS: U. S. STOVE CO., Chicago. M. P. BORDEN STOVE CO., Denver. UTAH STOVE & HDW. Co., Salt Lake City. THE HARRY UNNA CO., San Francisco. M. SELLER & Co., Portland, Seattle, Spokane. FONES BROS. HDW. Co., Little Rock, Ark.



# The Dangler Oil Heater, 1902

Height, 27 in.  
Weight, 10 lbs.  
None better.  
Made of polished  
Steel, with either  
Brass or Tin  
Tank.



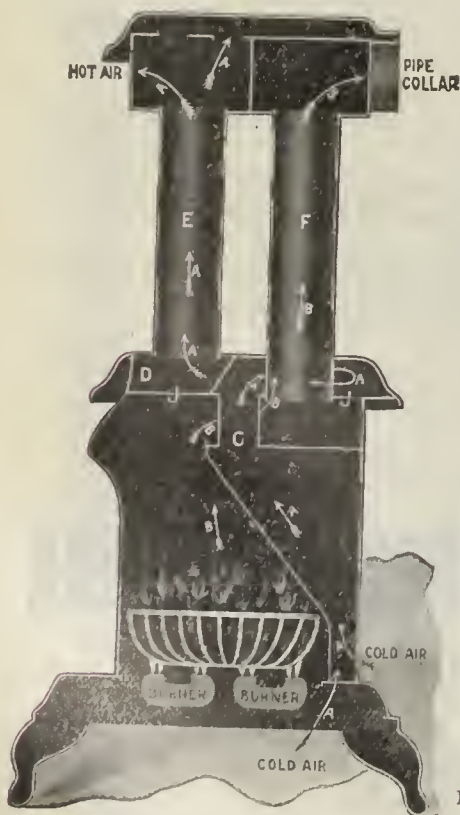
Ornamental,  
Durable,  
Powerful and  
Simple in  
Operation.  
For sale by  
Jobbers and  
Dealers everywhere.

THE DANGLER STOVE & MFG. CO., CLEVELAND, OHIO, U. S. A.

## Monarch Ventilator No. 164.

### A CALORIFIC WONDER.

Improved for 1902 by the substitution of **cast iron** fire-box section in place of sheet steel, the intense heat generated making this necessary.



Two 15-inch burners, with four rows of gas orifices in each, produce a terrific fire which quickly sets the incandescent brick clinkers to glowing, and the MONARCH Ventilating and Radiating System of pipes combine to make this the equal of a **hard coal base burner**.

Write for Descriptive Catalogue of  
**The Monarch Line Gas  
Heaters.**



**The Monarch Stove Mfg. Company,**  
MANSFIELD, OHIO.

Manufacturers  
MONARCH HEATERS, for Gas Fuel,  
ASBESTOS LINED OVENS, VAPOR STOVES, ETC.

AGENTS:  
H. R. BRUCE & CO., 228 Main St., Cincinnati, O.  
A. L. CANFIELD, 284-6 Pearl St., New York.

R. E. EDMONDS, 203 Wood St., Pittsburg, Pa.  
W. H. GRUENHAGEN, St. Anthony Park, Minn.





# 1903

## Reliable Oil Heaters

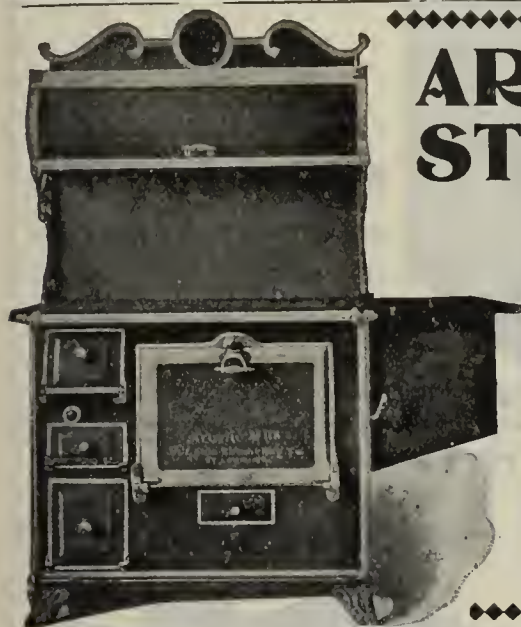
RELIABLE Oil Heaters have always been conceded Leaders. This season they are finer than ever. TO THE RELIABLE IS DUE THE CREDIT OF THE PERFECTION AND POPULARITY OF THE OIL HEATER TO-DAY. \* Our Gas Heater line is the largest and most complete. Write for catalogue and prices.

MADE BY

**THE SCHNEIDER & TRENKAMP CO.**

CLEVELAND CHICAGO SAN FRANCISCO

SOLD EVERYWHERE



## ARTISTIC ENAMELED STEEL RANGES

*The only Enameled Ranges on the market to-day.* Are not to be confused with the Black Japan and so-called baked enameled ranges which will burn off and rust. Our Enamel being fused with the iron is guaranteed rust and fire proof.

*The Highest Grade of materials* only are used in the construction of our ranges and our Enameling Process is the only successful one.

An ornament to the kitchen and a delight to the housekeeper because so easily kept BRIGHT and CLEAN by use of soap and water, doing away with the objectionable stove polish.

An attractive line and ready sellers. Send now for Illustrated Catalogue.

**The St. Louis Enameling Company,**

S. E. Cor. Ninth and Monroe Streets, ST. LOUIS, MISSOURI.

We do enameling of specialties and our line of Enameled Steel Signs cannot be excelled.

## The New Schill Range



THE most modern and up-to-date Range made to-day.

Possesses a number of special features found in no other Range. It must be seen to be appreciated. We make them in all the usual styles and sizes. Write for descriptive catalogue and prices to the trade.

**The Schill Brothers Company,**  
Crestline, - Ohio.

The Nelson & Bouquet Hardware Co., Minneapolis, Minn., North-western Agents. J. C. Shanks, 1547 Wazee St., Denver, Colo. H. A. Potter, 35 Montgomery St., San Francisco, Cal. Chas. H. Greene, 5085 Fairmount Ave., St. Louis, Mo.





## Natural Gas is Cheaper Than Coal,

Providing You Use the Proper Appliances.

We are sending out Catalogue No. 36, showing over one hundred different designs of Gas Stoves and Ranges that are economical and efficient.

**H. ADLER COMPANY,**

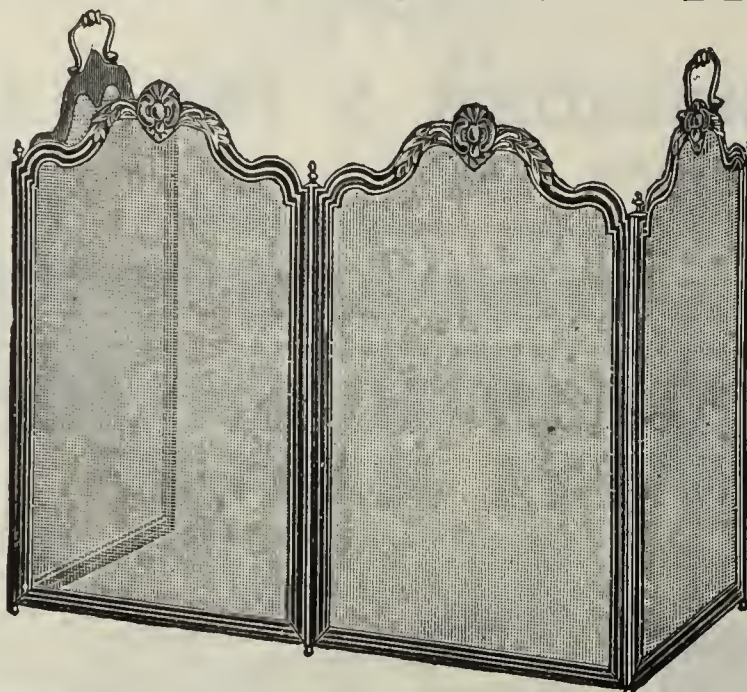
Manufacturers of Acme Gas Stoves and Ranges,  
**PITTSBURG, PA.**

## FRENCH FOLDING SCREENS FOR FIRE PLACES

We are the only manufacturers of this line in the United States.

*Send for Our Prices  
Before Importing.*

Our screens are heavier, smoother finished, and generally better than the imported article.



Finished in pure brass, gilt, lacquer and Berlin black.

Screens made in the following heights: 18, 20, 26 and 30 inches.

A large variety of styles.

Send for catalogue of  
**Fire Place Goods**  
made of brass, wrought iron and cast iron.

**The S. M. HOWES CO.,** Manufacturers, 42-44-46 Union Street, **BOSTON, MASS.**

## Up-to-date Air-Tighters.

**WE WANT YOUR BUSINESS !**

Our Goods are Strictly  
**HIGH-GRADE and DURABLE.**

We make 65 Styles and Sizes of  
**AIR-TIGHT HEATERS.**

Our Heaters are made of Blue Polished Steel, Superior Finish. Best Proportioned Stoves Made. Our Castings are Smooth. Our Mounting is Perfect.

We also make the "Noxall"  
Steel Cook for Wood and Coal.  
Has Perfect Square Aluminized Oven.

Large Capacity. Prompt Shipment Guaranteed.

**QUINCY FOUNDRY  
& NOVELTY CO.,**

QUINCY ILL.

COSBY—Style C.—Hot Blast.



Write for Catalogue and Prices.

ROYAL—Style A.







On a Dealer's Floor Speak for  
Themselves.

LET US TELL YOU ABOUT THEM.

**GEORGE M. CLARK & COMPANY**

73 LAKE STREET, CHICAGO.





**Red Cloud—Globe.**  
Justly Celebrated.  
Extensively Sold.

# THE UNION STOVE WORKS,

70 Beekman & 66 and 68 Gold Sts.,  
NEW YORK, U. S. A.

**Prosperity Perches High !**  
Many manufacturers are short of stoves!  
The strike will be settled and coal be plentiful  
in ample time, at a moderate price.

"The future holds no store of grief,  
And hope has not forsook it,  
For if you pay the price of beef  
You'll get the coal to cook it."



**Dash Heavy Sugar  
Loaf Stove.**  
Five Sizes, 2, 3, 4, 5, 6.

Timid dealers who de-  
lay ordering this year  
are liable to get left.  
The stoves illustrated  
on this page will burn  
any fuel; even the Self-  
feeders make good wood  
burners by lifting out the  
magazines.



**Station Agent.**  
Nos. 20, 22 and 24.

Great Rail Road Stove used  
in many stations of the largest  
Rail Roads. Powerful Heater.



## THE ASTOR GEM.—New Idea ! New Class !

Ornamental Globe in four sizes, 35, 45, 55, 65. With or with-  
out magazine. Full Nickered or Plain. For Stores, Offices, Ele-  
vated and Surface Rail Road Stations, Saloons, Restaurants,  
Club Rooms, Hotels, Chapels, Lecture Rooms, Lodge Rooms,  
Sitting and Reception Rooms.

Write for Samples. Send for Full Catalogue.

Six distinct types of Cylinder Stoves and 63  
varieties in all.

Cook Stoves, Ranges, Furnaces, Gas Ranges, &c.

The greatest variety of heaters  
in the world :

**OAKS, GLOBES,  
CYLINDERS, OIL  
STOVES, GAS RADI-  
ATORS, everything.**

These illustrations are just a few  
selections from our immense lines.



**Astor Oak.**  
Nos. 411, 413, 415, 417, 419.  
Sales this year unprecedented.



**Golden Red—Self-  
Feed.**  
Nos. 14, 16, 18, 20, D. D.  
22, 24, 26, R. F.



**Angler—Cylinder.**  
6 Sizes, with or without R. F.



# The Cooper Oven Thermometer

The First, Best and only thermometer ever used on stove oven doors which is of any real value to those who do baking. This is no loose advertising talk, but statements easily verified by facts.



Many of them have been in constant use thirteen years, and many thousands of them from eight to ten years. Used by over forty manufacturers of the highest grade ranges in the U. S. and Canada.

FULL SIZED CUT OF DIAL.

Since the use of the Cooper Thermometer has shown the necessity for such an instrument on oven doors, within the past five or six years there have been some half dozen devices put on the market called oven thermometers.

They do not deserve to be so-called.

Their bad working is depopularizing the name of oven thermometer with the public, who do not understand the difference between them and a good one.

Fortunately, unlike a watch, their value can easily be known by their faces.

Twenty degrees difference in the temperature of an oven, is sufficient to make "good luck," or "bad luck" in baking many kinds of food.

Unless an oven thermometer will plainly indicate such change, by a movement of the hand sufficient to be easily seen, such thermometer is positively worthless, by which to regulate the fire and heat of the oven. An attempt to use them for that purpose only produces disappointment and disgust, more or less of which attaches to the stove on which they are used. Between normal temperature, and extreme baking heat, there is a difference of 325 to 400 degrees. If for such a change of temperature, the whole movement of the hand of an oven thermometer is only two or three inches, it is plain that with a change of 20-30 or even 40 degrees, the movement of the hand would be too slight to be noticed by those who usually do baking, at least without a magnifying glass, which is not commonly used in a kitchen. The hand on the Cooper thermometer moves over six inches with such change of temperature, plainly shows a difference of 8 or 10 degrees in the heat of the oven, and even 2 degrees can easily be seen, by a slight knock on the oven door.

Next to good working durability is the most valuable quality in an oven thermometer. Thirteen years of satisfactory working is a very good record for the Cooper thermometer. Not being obliged to increase the radius of the hand in order to give it sufficient movement to be noticed, the dial on the Cooper thermometer is only as large as is necessary to be plainly seen by those using it, thereby making the danger of breaking much less than if it had a larger diameter. Those who use them do not say they "Do not think an oven thermometer amounts to much, anyway." The most common expressions of those who use the Cooper thermometer, is "I would not try to keep house without my oven thermometer," or "I don't know how I ever got along without it."

It is easily adjusted to either a swing or drop door, and is the best selling point ever put on a stove or range. However highly it is praised by the seller, it is more than verified when used. Do not buy a worthless article because it can be bought for a few cents less. It is sure to be far more costly in the end. An honest tile is preferable to a "make-believe" oven thermometer.

The price of the Cooper thermometer is very low indeed, when cost and value are considered. Every thermometer carefully adjusted, and tested by heat, before sending out.

Manufactured and Sold by the Inventor

**D. G. COOPER - Pequabuck Conn.**



**THE H.B. SMITH CO.,**  
**WESTFIELD, MASS., U.S.A.**

Catalogue furnished only upon application to  
**Heating Contractors, Engineers and Architects**

92 Pages. Size 9 x 12 Inches.

**COTTAGE  
BOILERS.**

STEAM BOILERS (8 SIZES), 550 SQ. FT. RADIATION SUPPLIED.

WATER BOILERS (8 SIZES), 900 SQ. FT. RADIATION SUPPLIED.

PACIFIC COAST AGENTS

**HOLBROOK, MERRILL & STETSON,**

SAN FRANCISCO, CAL.

EUROPEAN AGENTS

**AUG. EGGERS,**

BREMEN AND NEW YORK CITY.

SALESROOMS :

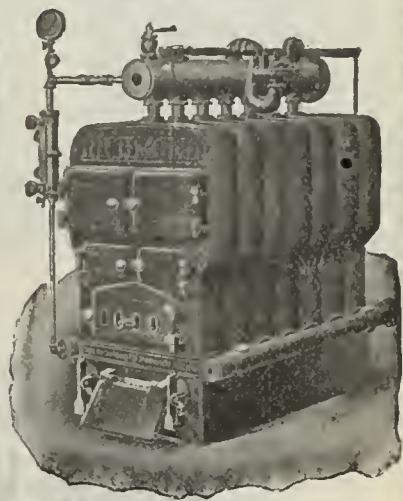
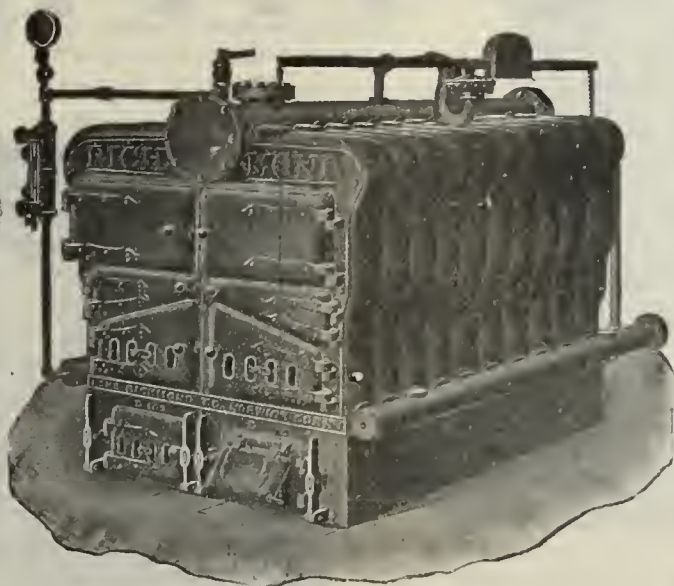
**THE H.B. SMITH CO.,**

**133 CENTRE STREET,  
NEW YORK**

**510 ARCH STREET,  
PHILADELPHIA.**



**T**HE season is now approaching when you will be *too busy* to consider the fine points of distinction between one boiler and another.



Why should you postpone another day informing yourself fully about the good points of . . . .

# RICHMOND BOILERS

SEND FOR OUR NEW **1902** CATALOGUE. DON'T FORGET  
TO ASK FOR PRICES ALSO.

**THE RICHMOND COMPANY,** NORWICH,  
CONN.

NEW YORK, PHILADELPHIA, PITTSBURGH, CHICAGO, ST. LOUIS,  
738 Park Row Bldg. 18-24 So. 7th St. 210 Ferguson Bldg. Chicago Heater & Supply Co. Rumsey & Sikemeier Co.



# Once We Sell, We Win,

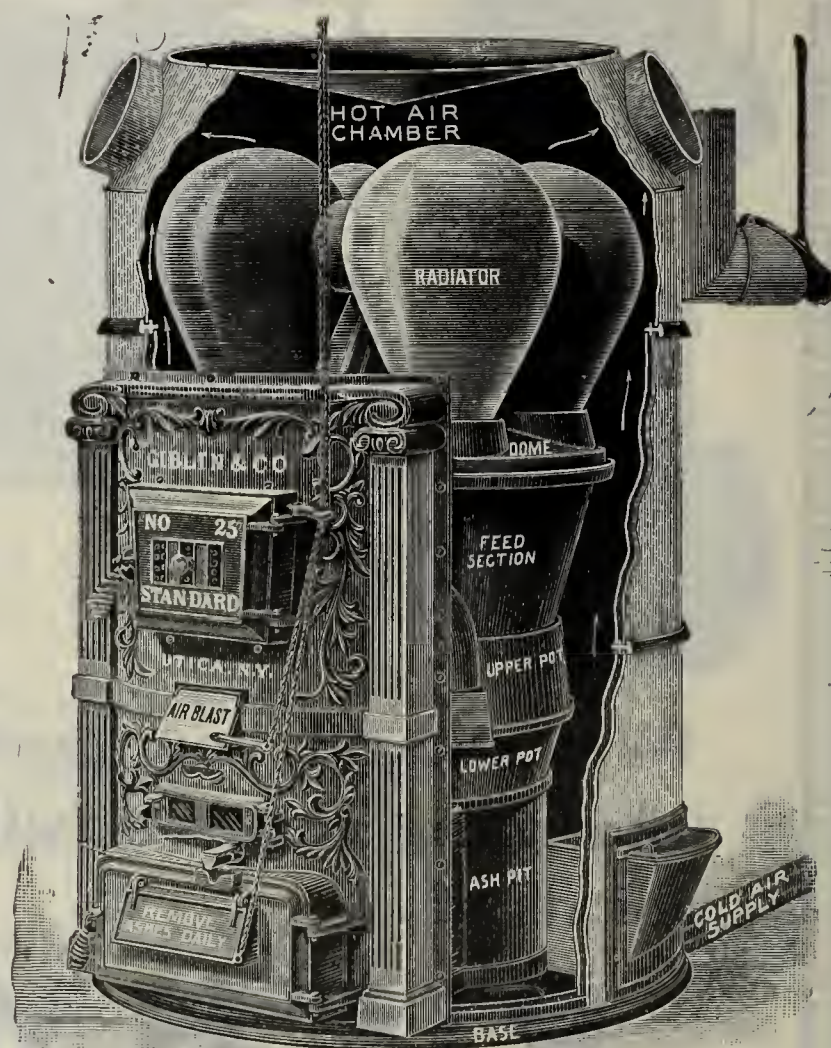
because what we furnish is so much better than we picture it that dealers feel they have a furnace that will bring trade, make friends and advertise them. Furnaces can be cheapened by reducing weight and quality, but this cheapening process usually increases the cost of fuel, necessitates repairs and kills the

# REPUTATION

of the dealer who recommends such cheap furnaces. We aim to secure efficiency first, with economical use of fuel, and then as reasonable price is made as such features will allow. To burn soft coal a furnace must be rightly constructed, must supply air at the places and in the quantities that the combustion requires. If our Standard Smokeless did not have decided merit it would not have so many imitators; but when it is compared the imitations are quickly seen to be counterfeits. This furnace burns soft coal without smoke, soot, or gas, and without damage to the castings. Dealers who have tried it continue to use it, and have used it for years. Dealers who do not know it are neglecting excellent opportunities for profit.

## WHEREVER SOFT COAL IS USED

this furnace will be thoroughly appreciated.



## ITS CONSTRUCTION IS OPERATION IS PRICE IS RIGHT.

**EFFICIENCY** in operation,  
**ECONOMY** in fuel and  
**DURABILITY** are most desirable  
features in a furnace, and this fur-  
nace has all these features.

### EXCLUSIVE TERRITORY

And every assistance given to  
reliable agents.

### OUR NEW

Catalog just issued shows our complete  
line of furnaces in styles and sizes suited  
for every want.

SEND FOR IT NOW.

**GIBLIN & CO.,**  
UTICA, N. Y.

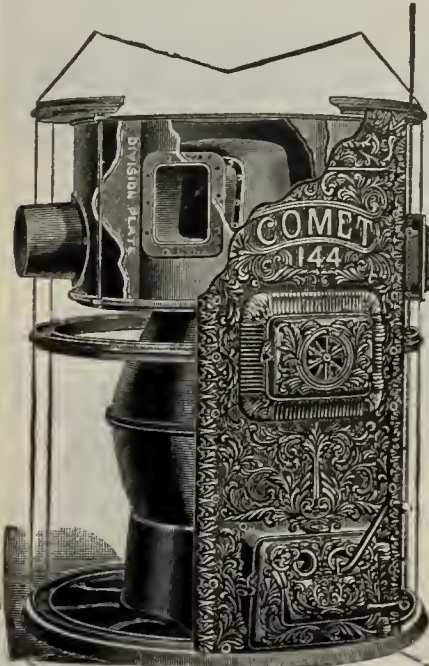


# THE STAMFORD FOUNDRY COMPANY

THE OLDEST STOVE FOUNDRY IN AMERICA

SINCE 1830 MAKERS OF CELEBRATED

## FURNACES, RANGES AND STOVES

THOUSANDS IN USE 1000 IN A SINGLE CITY  
RECORD EVERYWHERE ESTABLISHED*References to Some of Our Furnaces, Now and Through  
Past 25 Years in Continuous Service*

COMET Heavy Steel Drum

Both furnaces are well made—all exposed parts heavy. A generation of constant service establishes their record for durability, economy, powerful heating, easy to set, simple to operate.

The radiator of the STAMFORD ALL CAST FURNACE is a combined dome-tubular and cylinder construction of immense capacity and heating power.

The COMET radiator is made of heavy cold rolled steel. Fire pot and exposed parts especially heavy and durable.

The COMET is made for satisfactory service and not for PRESENT cheapness, ENDING IN EARLY DESTRUCTION.

OUR GUARANTEE follows everything we make, whether stoves, ranges or furnaces, and is established by our over 70 years' record.

Also an elegant and new line of OAK STOVES

Send for Catalogue, Capacities and Prices



STAMFORD COMBINATION HEATER

HOT AIR AND HOT WATER OR HOT AIR ONLY, AS ORDERED  
The above cut shows interior form of water section, giving an idea of its great heating surface and consequent power.

### THE STAMFORD FOUNDRY COMPANY

STAMFORD, CONN.

IF YOU ARE NOT SELLING THE

### Peck-Williamson Underfeed Furnace

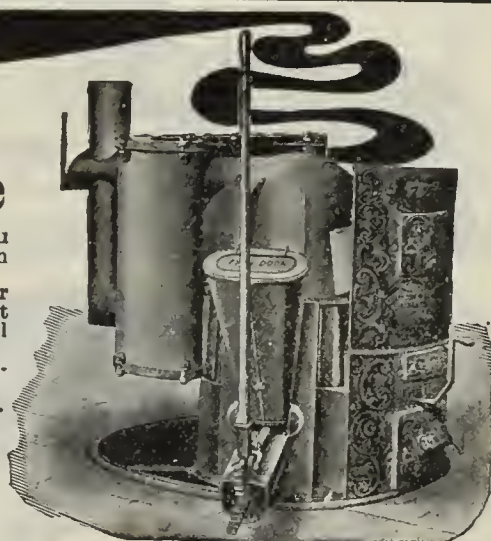
you have not the trade and are not making the money you might. Just a pull or two of the lever feeds the new coal from underneath.

The Underfeed Furnace consumes less fuel than any other furnace ever built. The coal is burnt more slowly. All the heat units from it, as well as from the smoke, are utilized and all smoke eliminated.

Our handsome booklet explains its splendid heating qualities and coal saving.

You may have this booklet and our special plans for selling. Ask for booklet about our Laundry Dryer also.

THE PECK-WILLIAMSON COMPANY,  
CINCINNATI, OHIO.



### WEIR ALL STEEL GAS AND SOOT CONSUMING FURNACE.

THE HEAVIEST STEEL FURNACE MADE.

Absolutely gas and dust tight. A great heat-producer but a fuel saver.

MANUFACTURED BY

THE MEYER FURNACE CO.,

1300-1304 S. Washington St.,

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PEORIA, ILLS.

### "The Handy Furnace Pipe."

MADE WITH A VIEW OF BEING SAFE.

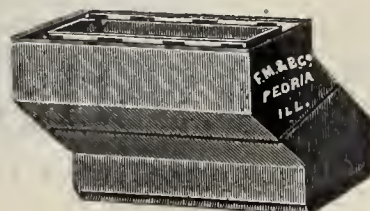
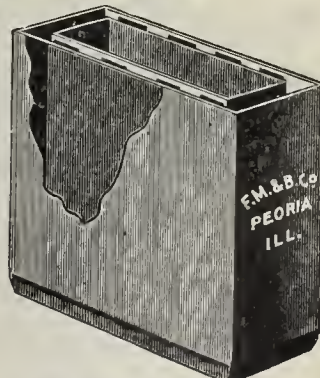
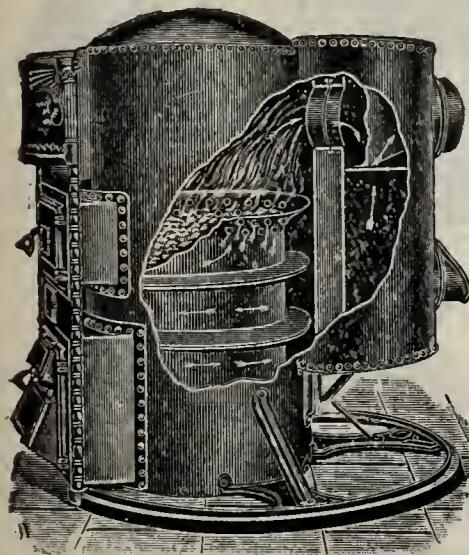
The saving of labor in putting it up really makes it the cheapest hot air pipe on the market.

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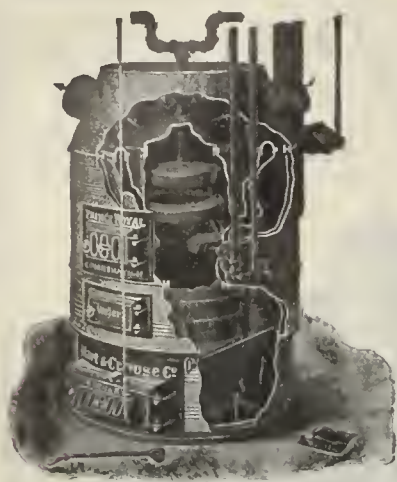
F. MEYER &amp; BRO. CO.,

SEND FOR CATALOGUE.

PEORIA ILLS.







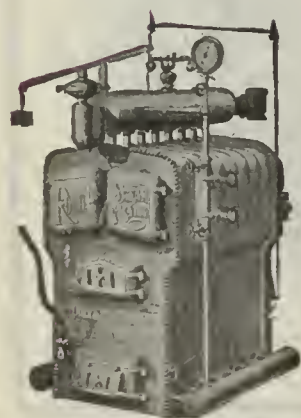
# Royal Heaters.

**HART & CROUSE CO.,**

235 Water St., New York. 78 Lafayette St., UTICA, N. Y. 79 Lake St., Chicago.

The Leading Line of Heating Apparatus.

**HOT WATER,  
STEAM,  
HOT AIR.**



See how the



1900

# BENGAL



1901

Has Grown.

We will tell you more  
about this down-to-date

**FURNACE**

in our Free Booklet.

Will you send for one?



1902

**FLOYD, WELLS & CO., Royersford, Pa.**

NEW YORK OFFICE, 210 WATER ST., R. W. HILLMAN, Manager.

Eastern Selling Agents:

**GURNEY & CO.,**

Washington, Hanover and Elm Streets, Boston, Mass.





Zenith Flue Box Base Radiator.

## OUR ZENITH PATTERNS OF RADIATORS

are used in Park Row Building, New York; Stock Exchange, Hotel Touraine, Hotel Marie Antoinette, Bank of New York, St. James Building, Barnard College New Buildings, D. O. Mills' Hotels Nos. 1 and 2, W. W. Astor Apartment Building, all of New York City; Forts Hancock and Wadsworth; P. O. Building, Washington, D. C.; Union Station, Pittsburgh; Broad Street Station and Arcade Building, at Philadelphia, etc., etc., etc. These Radiators may therefore be said to have secured the endorsement of a large number of the most prominent heating engineers in the United States.

Send for New 1902 Catalog.

**AMERICAN RADIATOR COMPANY**

Lake and Dearborn Streets, CHICAGO.

New York. Boston. Philadelphia. Buffalo. St. Louis. Minneapolis. Denver.

# It's a brick

lined heavy wrought iron fire pot combined with our own patent auxiliary Horseshoe Radiator that gives such an extraordinary heating capacity and long-wearing powers to The Household Furnace.

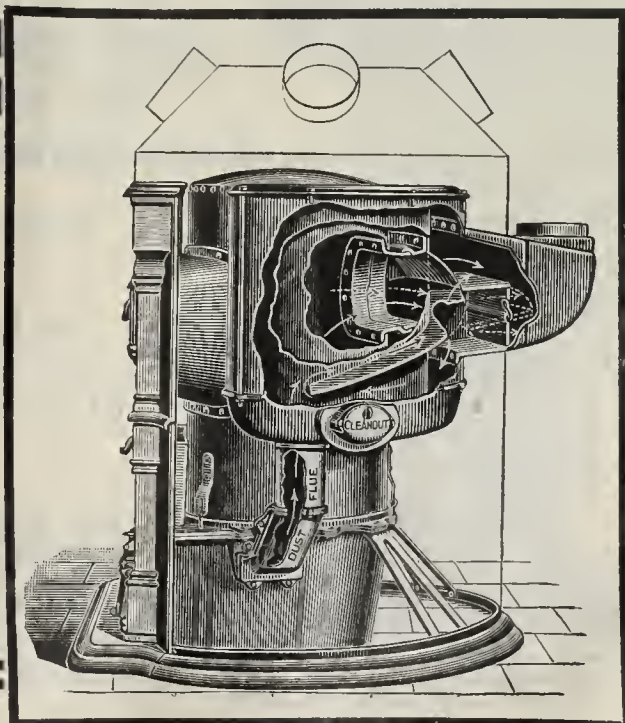
# HOUSEHOLD

With a Household Furnace you're prepared to meet the stiffest heating proposition that ever happened—and win. We've the RIGHT furnace for every house that's built.

If you want to get lots of good furnace work this Fall—become a Household Agent—Now.

Write for Catalog and Price List.

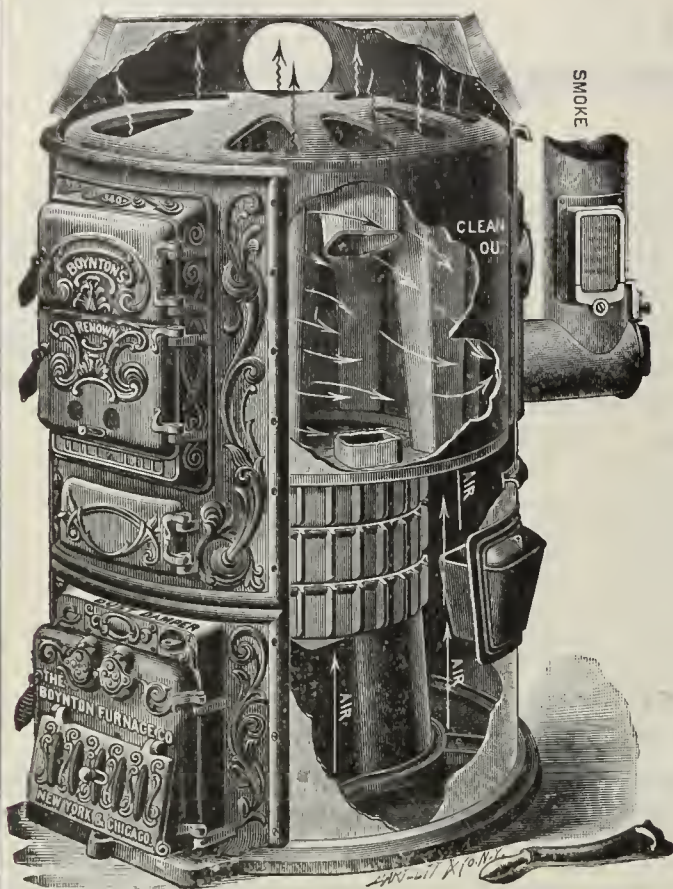
**White, Warner Co., Taunton, Mass.**





# BOYNTON'S "RENOWN"

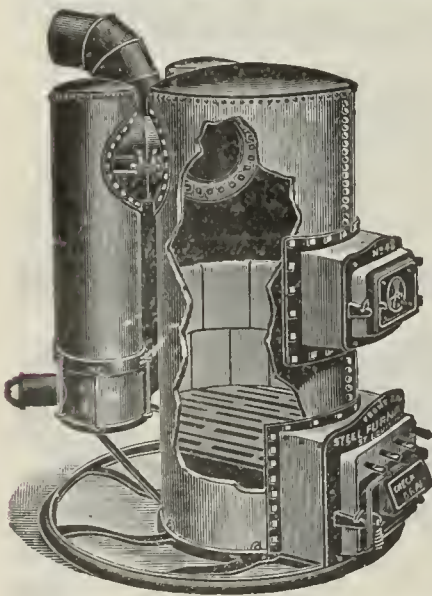
## PORTABLE FURNACE



**A** NEW and distinct type of construction thoroughly tried and tested. Possessing more area of heating surface to area of grate surface than any other furnace manufactured.

Notice construction of cast iron heating flues, each one directly over and in contact with fire. Can we mail you catalogue and prices?

*The* **BOYNTON FURNACE CO.,**  
NEW YORK. CHICAGO.



### Front Rank Hot Air Furnaces

are built on vertical lines; air comes in direct contact with entire heating surface.

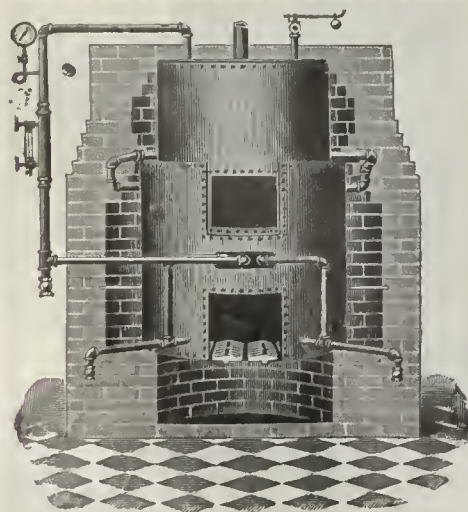
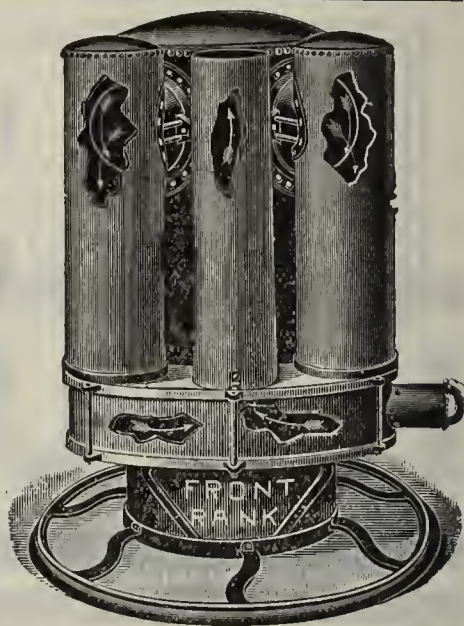
*The Front Rank Fire Chamber* is one solid sheet of closely riveted steel; being lined above the fire lines with genuine fire clay tiling it is the most durable made.

The radiators are very large and have an unusual area of heating surface in comparison with the size of fire pot.

These furnaces burn hard or soft coal or coke. We also make wood burning furnaces.

Send for our catalogue, it will give you a better idea of what we make.

**FRONT RANK STEEL FURNACE CO.,**  
2301 to 2309 Lucas Ave., St. Louis, Mo.



**THE HAXTON**

**A Steel Brick-Set Boiler for Steam and Water Heating—Hard or Soft Coal.**

HAS AN ESTABLISHED REPUTATION.

SOLD ON MERIT.

PRICES TO THE TRADE ONLY.

**KEWANEE BOILER COMPANY**

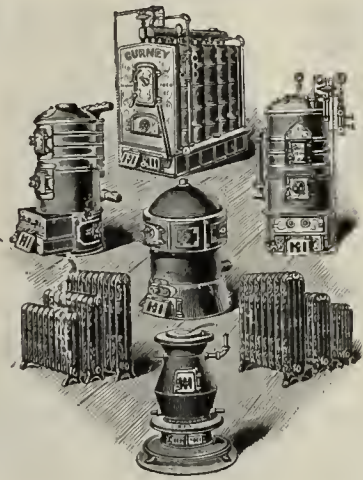
Chicago Store, 169 E. Lake St.

KEWANEE, ILL.

Eastern Representatives:

MODEL HEATING CO.,  
Philadelphia, Pa.  
New York, N. Y.  
Buffalo, N. Y.  
Boston, Mass.





## THE NATURAL OUTCOME

Given honest motives and exceptional facilities and you can accurately forecast the outcome. That's exactly the case with

### "Gurney" Heaters

400 SERIES, DORIC, and BRIGHT IDEA

Only one motive ever influences us, viz.—to PRODUCE THE MOST DURABLE, MOST EFFICIENT HEATER. And that motive is reinforced by every needed facility,—the right kind of material, of workmen, of tools and experience. So the outcome is just what you'd naturally expect: long wear, small fuel consumption, an abundance of heat and easy operation. And it's these features, combined with prices no greater than those of inferior makes, which account for its attractiveness.

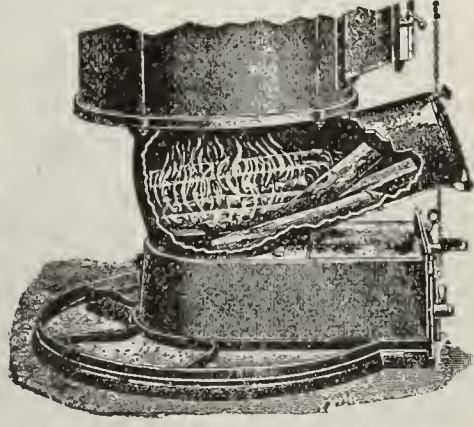
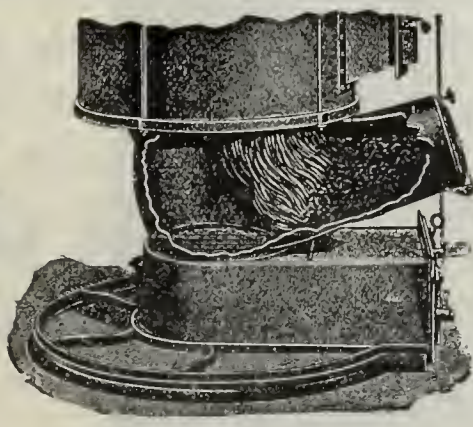
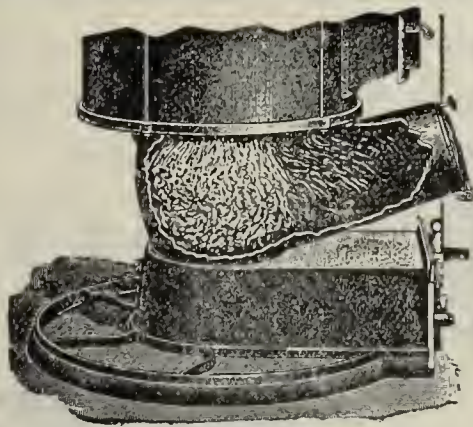
You ought to share its profits as well as other dealers. Can we not arrange an agency? Write us to-day.

## GURNEY HEATER MFG. CO.,

Branch, 111 Fifth Ave., NEW YORK CITY.

74 Franklin St., BOSTON.

Western Selling Agents, JAMES B. CLOW & SONS, 358 Franklin St., Chicago, Ills.



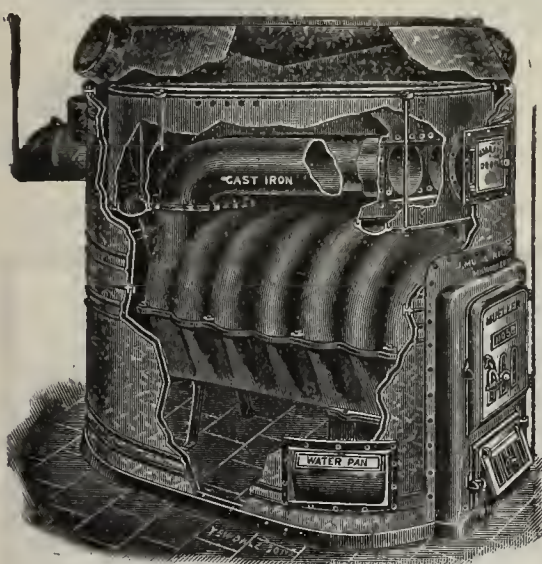
## THREE PRACTICAL USES

to which the *Combination* Fire Bowl and *Coking Magazine* used on the **PATRIC FURNACE** may be put.

The first cut shows soft coal undergoing coking process in magazine, with coked coal in main bowl. A *great fuel saver*. Second cut illustrates fire carried only in magazine, for light Spring and Fall heating, a *great convenience*. Third illustration shows furnace used for wood. *A success for twenty years*.

SEND FOR NEW ILLUSTRATED CATALOGUE.

**THE PATRIC FURNACE CO., = Springfield, Ohio.**



For Long Wood.

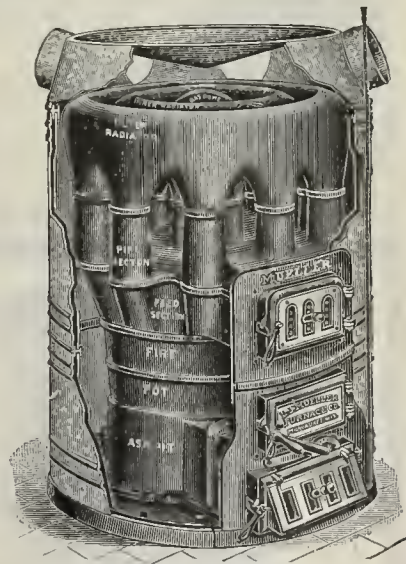
"THE VERY LATEST"  
IN

## Wood Furnaces

Economical—Durable—  
Powerful

Our Line of Heaters Comprises  
all Styles—For all Kinds of Fuel.

Write for Our Catalogue and Prices.



For Hard or Soft Coal.

EVERYTHING IN THE HEATING LINE.

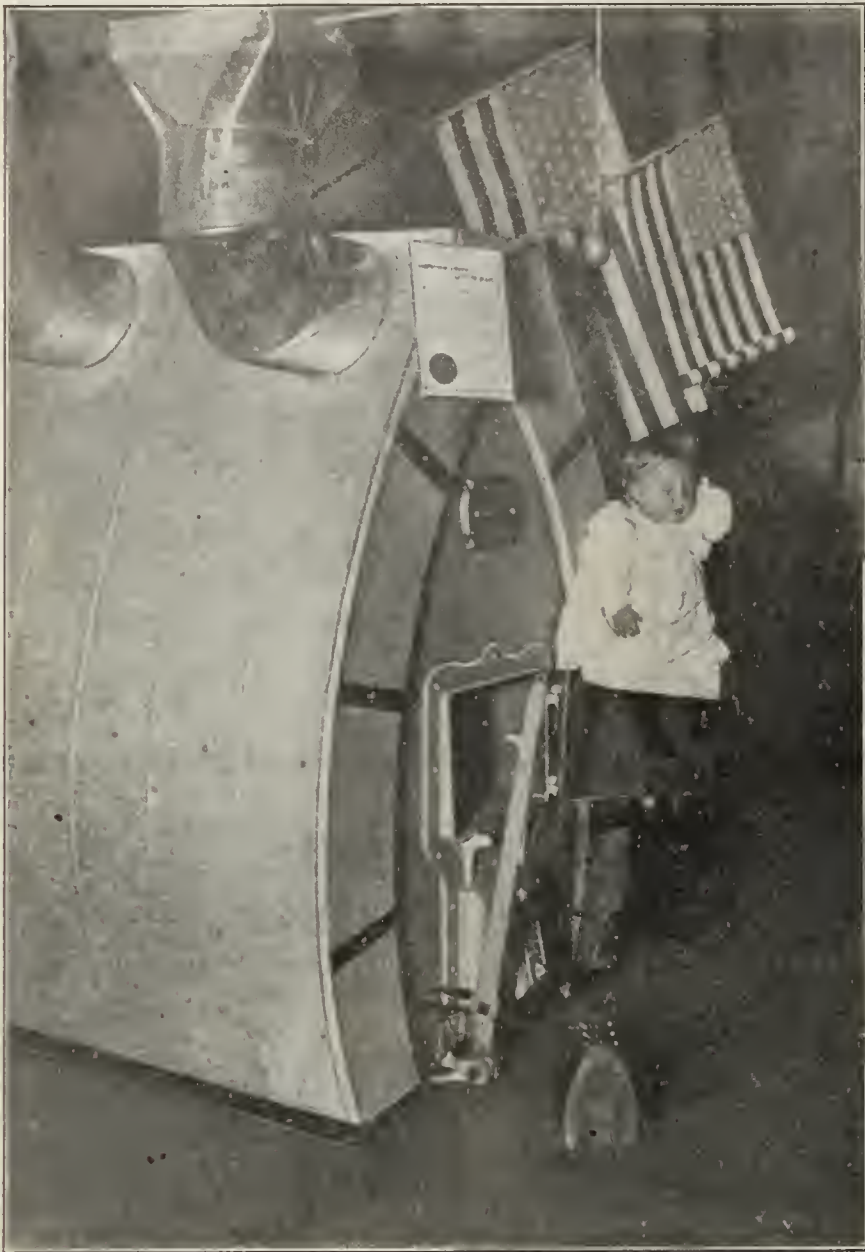
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## L. J. MUELLER FURNACE CO.,

190 REED STREET,

MILWAUKEE, WIS.





## "The Three Stantons."

Messrs. Munson Bros., Connells-ville, Pa., Furnace Expert, Mr. Woodall, has placed such a high estimate upon our furnace that he has honored us by naming his last son "Stanton" and calls the photograph "The Three Stantons." While we cannot hope to be so favored by all dealers, yet we do hope that every furnace dealer in the U. S. will allow us to prove the superiority of our system.

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**The Stanton  
Heater Co.,**

MARTIN'S FERRY, O.



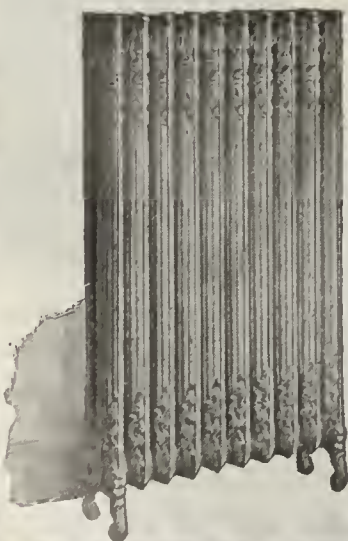
## WINCHESTER

There is only one thing we know of that will give out more heat than a "WINCHESTER" Heater, and that is the Sun. We doff our caps to H. M., but we take good care to keep ahead of all other competitors. Facts about agencies of Smith & Thayer Company, Boston, Mass.; 105 Beekman Street, New York.

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SINGLE COLUMN.



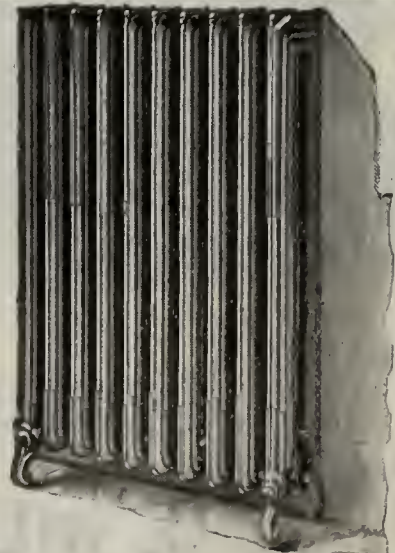
Best. Cheapest. Most Durable.

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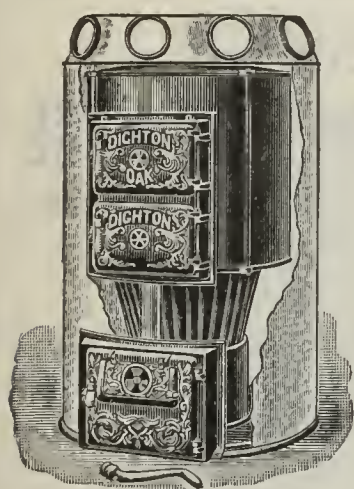
**R-A-D-I-A-T-O-R-S**

THE J. L. MOTT IRON WORKS,  
84-90 Beekman Street, NEW YORK, N. Y.

TWO COLUMN.







## THE "Dighton Oak" Furnace

### Dimensions and List Prices:

| No. of<br>Furnace. | Diameter of<br>Fire Pot. | Height of<br>Castings. | Diameter of<br>Casings. | List Price of<br>Castings. | List Price of<br>Casings. | List Price of<br>Wood Grates. |
|--------------------|--------------------------|------------------------|-------------------------|----------------------------|---------------------------|-------------------------------|
| 190                | 20 inches                | 51 inches              | 36 inches               | \$ 48 00                   | \$ 8 00                   | \$1 68                        |
| 210                | 22 "                     | 53 "                   | 39 "                    | 56 00                      | 9 00                      | 2 08                          |
| 230                | 24 "                     | 51 "                   | 42 "                    | 68 00                      | 11 50                     | 3 36                          |
| 250                | 26 "                     | 53 "                   | 46 "                    | 78 00                      | 14 00                     | 4 17                          |
| 282                | 29 "                     | 60 "                   | 52 "                    | 110 00                     | 17 00                     | 6 67                          |
| 310                | 31 "                     | 62 "                   | 52 "                    | 135 00                     | 17 00                     | 7 50                          |

The "DIGHTON OAK" is made especially for burning wood, but is as well suited for coal, coke or gas for fuel.

The general type of construction is exactly the same as the regular "DIGHTON" which has become so well-known as a durable and economical heater. The outside measurements, flue construction and flue measurements are the same; the large double feed doors allow of taking in large chunks of wood or a 4-foot stick cut once.

The wood grate is not fastened to the fire pot or coal grates; it rests upon the triangular grate bars, and by easily turning these bars the fire is thoroughly cleaned.

If at any time it may be desirable to use coal instead of wood as fuel, this grate can be removed in a minute's time through the feed door and set aside until such time as you wish to change to burning wood again.

**DIGHTON FURNACE CO., Taunton, Mass.**

Established 1850.

## OUR REPUTATION



We've been making high grade heating apparatus for 52 years, until the name "THATCHER" has now a well defined meaning for individual merit. It stands for unrivaled construction and efficiency in operation. It means a better value and a stronger guarantee for the dealer—*things backed by a half century reputation.*

Furnaces. Ranges. Steam and Hot Water Heaters.

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**THATCHER FURNACE CO.,**

Works: Newark, N. J.

240 Water St., New York.



## The Robinson Tubular Warm Air Furnaces

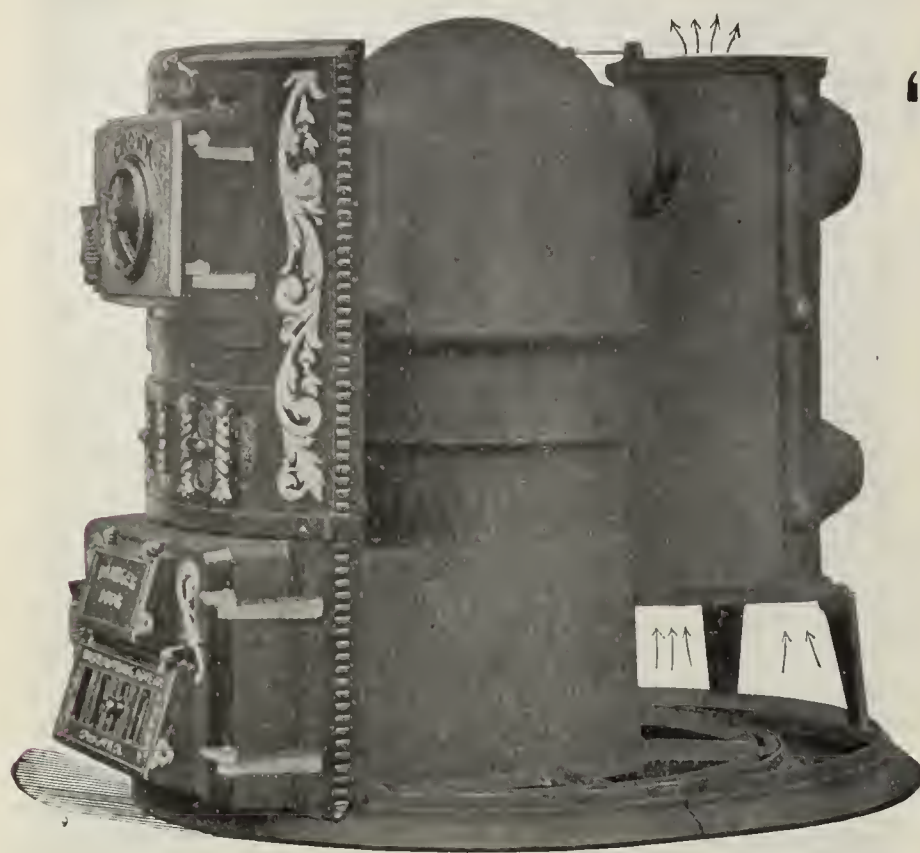
give universal satisfaction where-  
ever used.

They are up-to-date in every respect and have many special features not found in other furnaces.

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**ROBINSON FURNACE CO., Chicago.**





## THE CROWN "LOW DOWN" FURNACE

Competes with Steam and Hot Water Heating.

1st—In heating at long distance.

2nd—In an economical consumption of fuel.

OUR CROWN LOW DOWN FURNACE IS  
**SUPERIOR TO STEAM AND HOT WATER.**

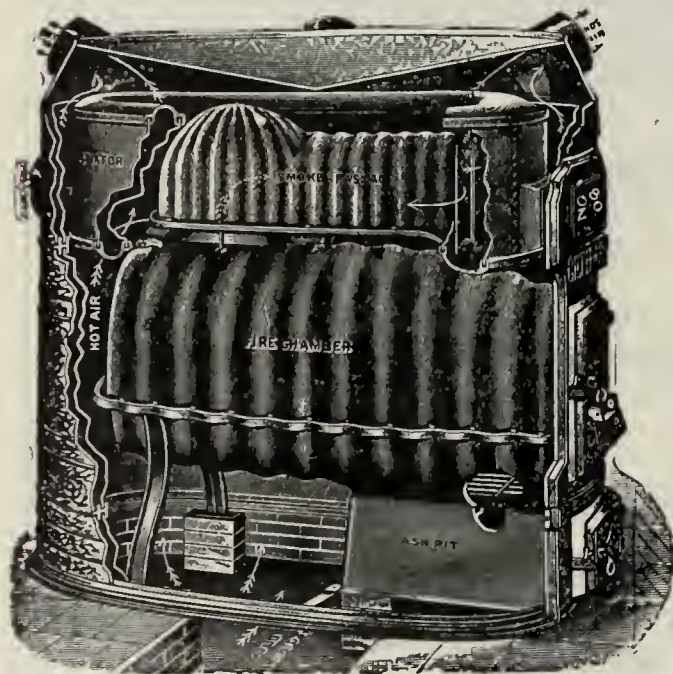
1st—In its simplicity of management, any ordinary help can manage this furnace.

2d—In its economy of repairs, repairs being only needed at long intervals, the skilled mechanic not required to repair this furnace.

3d—*Most important of all* is the purity of air supplied. It's the ideal sanitary house heating construction. Any one caring for the good health and comfort of the home should not fail to examine this furnace before installing any other system of heating.

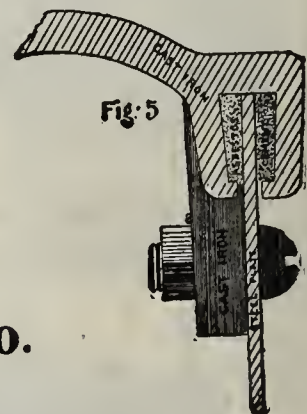
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POTTSTOWN, PA.

# GILT EDGE



stands for best when applied to furnaces. The many dealers who have installed and the thousands of householders whose homes have been heated by our furnaces show they like the Gilt Edge, as will be seen by the testimonials they have written. Let us send you a few of them.

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The Best and Cheapest Line of Wood Furnaces. . . .  
Furnished for either Brick or Galvanized Iron Casing

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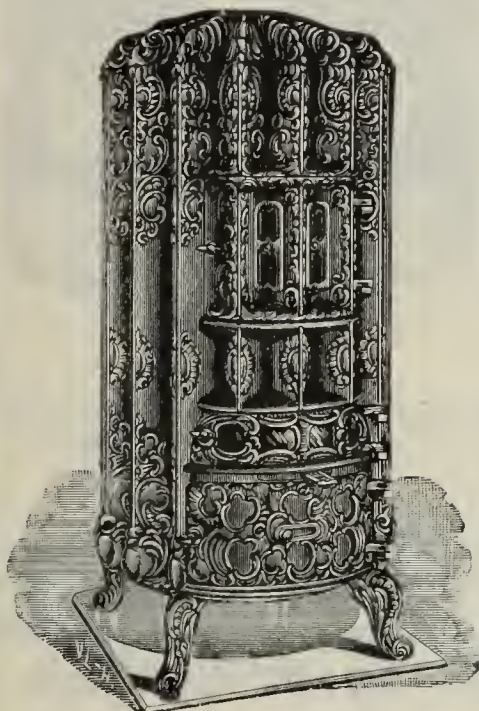
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We can furnish all repairs  
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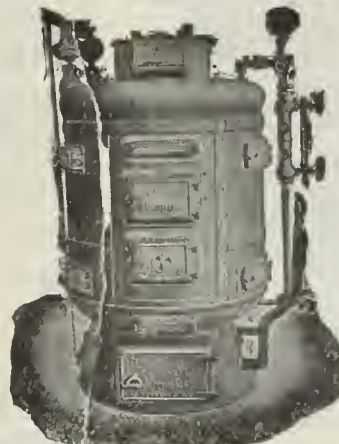
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Endorsed by the foremost Architects  
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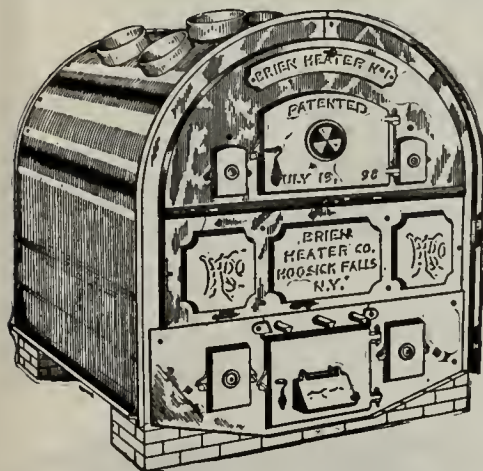
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HOOSICK FALLS, N. Y.



## The Champion Hot Water Combination Heaters.

They Fit Any  
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Base section when  
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These Heaters are made in five sizes diameter, and  
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Will heat those cold rooms or an addition to the build-  
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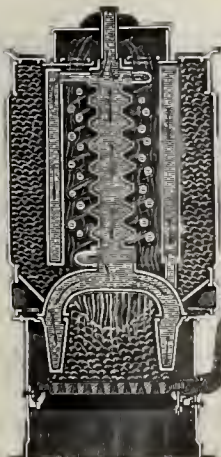
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have exclusive fit-  
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Perpendicularly over the chimney of a lighted lamp and then across the top of the chimney and see which will burn your finger most.

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are placed directly over the heat current that passes up the center of a stove or furnace pipe. As a heat saver and distributor of hot air they are unapproached by any device ever invented. A practical test will convince both you and your customers.

Send for our inducements to handle these radiators now. The season is just approaching when you can sell large numbers of them.

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## Sheet Steel Draft Registers with Screws Complete.

PATENTED DEC. 17, 1901

Threads are cut and disk is securely fastened  
Without cotter pins or washers,  
Yet it is loose or tight as wanted.

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STOCK SIZES.

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| 3 in.  | 4½ in. |
| 3¼ in. | 4¾ in. |
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Any size made to order in quantities.

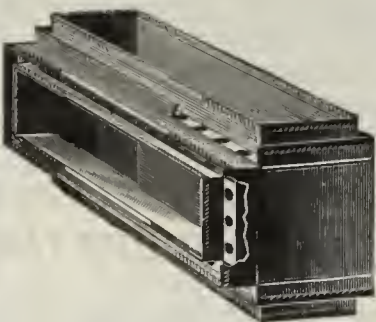
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**EXCELSIOR HEATING  
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Excelsior { FURNACE PIPE,  
HOT AIR REGISTERS,  
STOVE PIPE ELBOWS,

ARE ALL SELLING AT

**MUCH BELOW**

their real value.

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THIS shows the construction of the ROCHESTER (stove-pipe) RADIATOR.

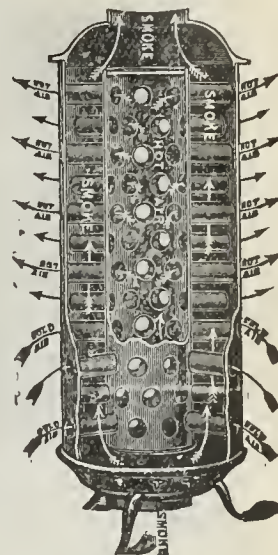
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THIS is the one your customers have frequently asked you about.

THIS is built like a steam boiler.

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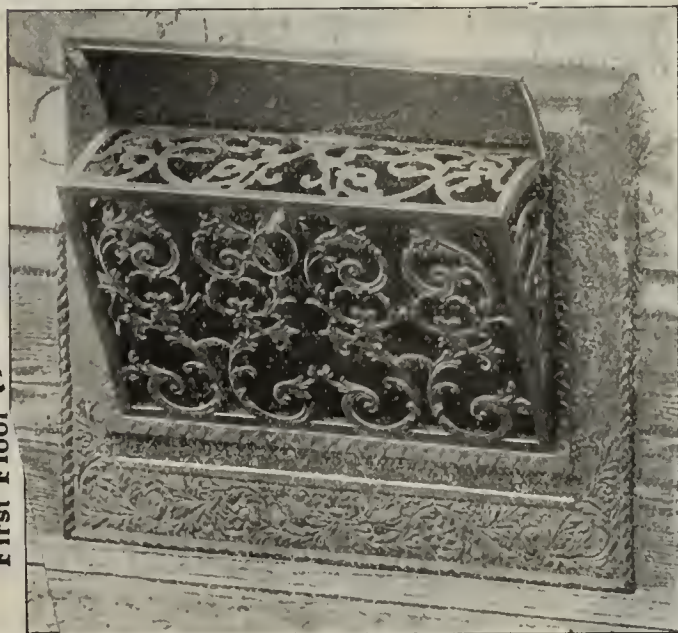
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Conceded the best  
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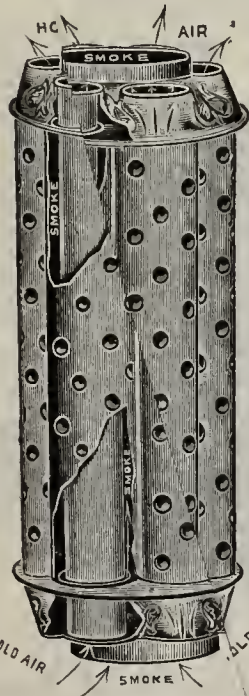
Ample capacity.

Protects the wall.

Irresistible to the  
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**A**TOMS of heat make degrees of temperature in a house. Every degree of temperature conserved by the utilization of heretofore wasted heat means added weight to the side of economy on the balance of expenses. The cause which produces these effects is the COLUMBIA RADIATOR.

A radiator which utilizes the most heat, which is neat and compact and which is so constructed as to be most easily cleaned, is sure to prove the quickest, readiest seller. We call your attention to the vertical system of tubes in the COLUMBIA which assures direct radiation, even distribution of heat and added facilities for ventilation, and which also assures the simplest, easiest method of cleaning.

We solicit your correspondence, knowing that offering you as we do a superior article at a price which places us in a class alone, when you place your order the COLUMBIA will command your attention. We do not offer an untried article, but one which has stood the test and proven itself a marketable product.

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### H. & C.

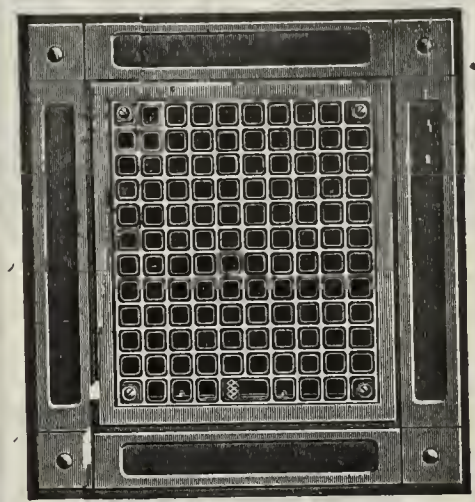
Wrought  
Steel

## REGISTERS

...and...

## VENTILATORS.

**STRONG, LIGHT,  
HANDSOME in SIM-  
PLICITY of DESIGN.**



**FURNISHED WITH  
WROUGHT STEEL  
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FACE PLATES, AND  
IN ALL FINISHES.**

Manufactured by

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GENERAL SALES AGENTS,  
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A complete line of Steel Ranges, with all the latest and best in Steel Range Construction, made to give satisfaction to both dealer and user. The long list of good points in the Twin Burner Steel Ranges are too numerous to mention here. If you are interested, get our new catalogue.

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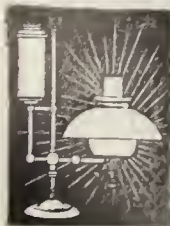
Sole Agents for Radiant Home Steel Ranges for Missouri, Southern Illinois, Kansas, and Oklahoma Territory.

## GLENDALE

Stoves and  
Ranges



Manufactured by  
**SOMERSET STOVE FOUNDRY CO.,**  
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is a portable, 100 candle power light, costing only 2cts per week. Makes and burns its own gas. Brighter than electricity or acetylene, and cheaper than kerosene. No Dirt. No Grease. No Odor. Over 100 styles. Lighted instantly with a match. Every lamp warranted.

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They have six 8 inch lids. Oven, 17 x 21 x 12. Top Cooking Surface, 30 x 36. Large Warming Closet. 15 gallon Reservoir. Duplex Grate. Burns Wood or Coal. Lined throughout with asbestos.

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Ranges, Furnaces, Fire Place Heater Stoves of Every  
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*Double Flue  
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Only Double Flue Ranges in the  
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Draw-Out Grate.

Handsomely Finished Through-  
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and compare them with others.

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| Hot Air Pipe, per foot, net.....                       | 7 7-10c.  | 8 2-5c.  | 9 c.     | 11 9-10c. |
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| 45 Angle, per foot, net.....                           | 7 7 10c.  | 8 2-5c.  | 9 c.     | .....     |
| 3-Piece Elbow.....                                     | 12 3-5 c. | 14 c.    | 15 2-5c. | .....     |
| 4-Piece Elbow.....                                     | 14 c.     | 15 2-5c. | 17½ c.   | 24½ c.    |
| 4 x 10 Single Pipe, per foot, net.....                 | .....     | .....    | .....    | 9 1-10c.  |
| 4 x 12 Single Pipe, per foot, net.....                 | .....     | .....    | .....    | 9 4-5 c.  |
| 4 x 11 Double Wall Pipe, per foot, net.....            | .....     | .....    | .....    | 20 c.     |
| 4 x 13 Double Wall Pipe, per foot, net.....            | .....     | .....    | .....    | 24 c.     |
| 5-inch and 6 inch Common Smooth Iron Stove Pipe.....   | .....     | .....    | .....    | 10 c.     |
| Woods Charcoal Iron Stove Pipe.....                    | .....     | .....    | .....    | 11 c.     |
| 6-inch Long End Adjustable Elbows, dozen.....          | .....     | .....    | .....    | 95 c.     |
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OURS ARE BALL BEARING.  
OURS ARE THE BEST.  
OURS ARE THE CHEAPEST.

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HEATING BY COMBINATION STOVES  
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Suitable for Large or Small  
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Heat Water Quickly.  
Circulation is Positive.  
No Joints Inside to Leak.

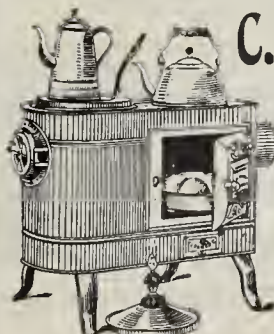
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## BURTON'S Fuel Economizer

Attached to stove pipe, saves more  
fuel and radiates more heat than any  
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NO TROUBLESOME TUBES.

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PATENT AIR  
TIGHT BAKER  
AND HEATER.

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Write for particulars.

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# Furnace Heating.

A Practical and Comprehensive Treatise on Warming Buildings with Hot Air, by William G. Snow, with an Appendix on Furnace Fittings. 170 pages; size, 6 x 9 inches. Cloth bound. Price, \$1.50.

This is the only book that has been brought out which presents a systematic and reliable treatment of the warm air furnace system of heating.

It deals with the various types of furnaces, their construction, proper location and setting, together with furnace fittings, and all matters pertaining to the installation of furnaces and to effective and economical heating by warm air. The subject is discussed for the first time by a competent author possessed of a scientific education and a practical training, who presents positive rules, based on a long experience, for guidance in designing furnace systems for dwellings and other buildings where this popular method is employed. The various details of furnace work are described simply and at such length that the volume will be valuable to all who are in any way interested in the subject. It is recommended to practical furnacemen, to architects, builders and house owners, and to tanners and plumbers in suburban sections who do furnace work. To all these it will prove a reliable text-book and guide.

## PARTIAL SUMMARY OF CONTENTS BY CHAPTERS.

**Chapter I.—Furnaces**—Is devoted to Furnace Construction—The Relative Proportion of Furnace Parts—Secondary Heating Surface—Economy and Efficiency—Heating Capacity and Exposed Wall Surface—Manufacturers' Ratings of Their Own Productions, etc.

**Chapter II.—House Heating**—Compares Furnaces and other apparatus, and describes Method of Setting Brick and Portable Furnaces—Location and Area of Cold Air Supply—Cold Air Rooms and Air Filters—Return Ducts and Air Circulation—Size of Hot Air Pipes—Location of Registers, etc.

**Chapter III.—The Combination System**—Discusses Heating Distant Rooms with Radiators—Balancing the System—Location of Water Heater in Furnace—Capacity of Water Heaters—Size of Radiators, etc.

**Chapter IV.—Air**—Deals with the Necessity of Ventilation—Water Needed to Moisten Air—Expansion of Air—Velocity of Air in Tubes, etc.

**Chapter V.—Heating and Ventilation of Buildings**—Considers the Size of Furnaces Required—Fresh Air Room and Supply—Air Circulation—Size of Flues—Use of Stack Heaters—Size of Heating Coils in Vent Flues, etc.

**Chapter VI.—Heating of Public Buildings, Churches and Stores**—Is given to the Size of Furnaces Required—Grate Surface in Ventilated Buildings—Air Supply—Size of Heating and Ventilating Flues—Size of Stack Heater, etc.

**Chapter VII.—Fan-Furnace Combination System**—Is devoted to Positive Warm Currents from Fan Systems—Location of Fan and Driving Apparatus—How Good Furnaces are Aided by Fans—Types and Efficiency of Fans—Area of Ducts and Flues, etc.

**Chapter VIII.—Temperature Control.**

**Chapter IX.—Estimate and Contract Blanks.**

**Chapter X.—Value of Fuels.** The Proper Size for Furnace Chimneys—with tables.

## APPENDIX.

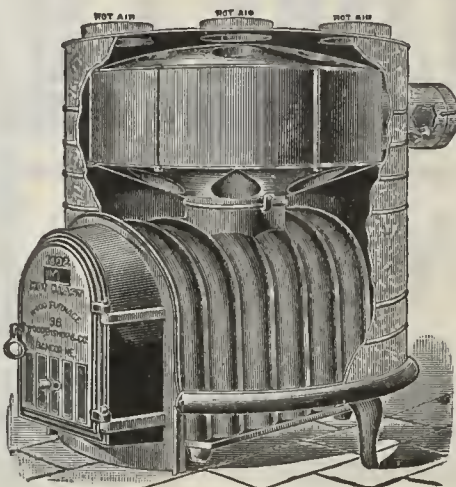
**Furnace Fittings.**—A section of 45 pages dealing with the Making of Furnace Casings—Metal Cold Air Boxes—Making Furnace Bonnets and Collars—Making Pipe and Elbows—Register Boxes and Stack Shoes, etc.

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THE HOT BLAST.

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a practically indestructible casting, heavily corrugated to stand the strain.

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all directly exposed to the heat of the fire, giving great heating capacity even when fire is low.

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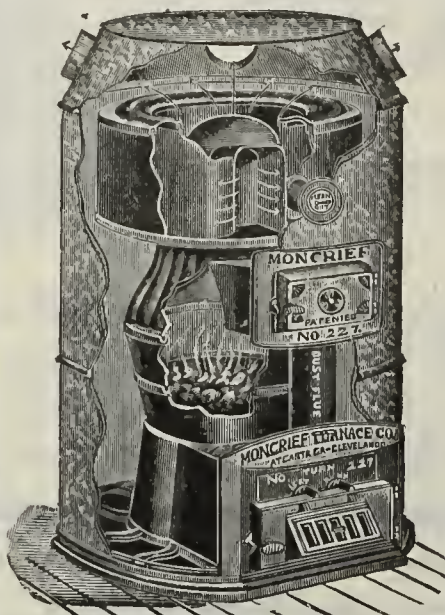
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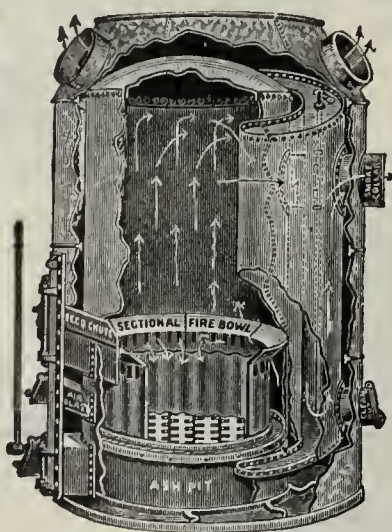
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is a trade winner because it has points of merit peculiar to itself that can be found in no other steel furnace. Our new catalogue is now ready to mail and a description of our Hot Air and Hot Water Combination Furnace can be seen in it. We furnish either the cast iron lining or the fire brick at the same price. Our Wood Furnace is called a powerful heater by those who use it.

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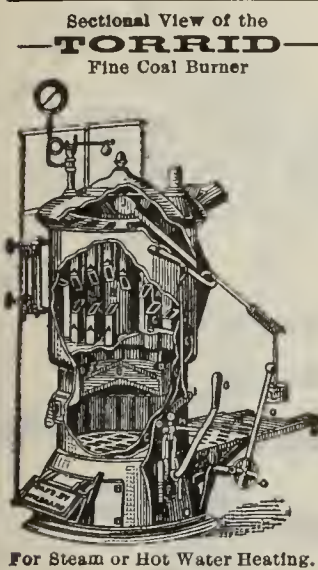
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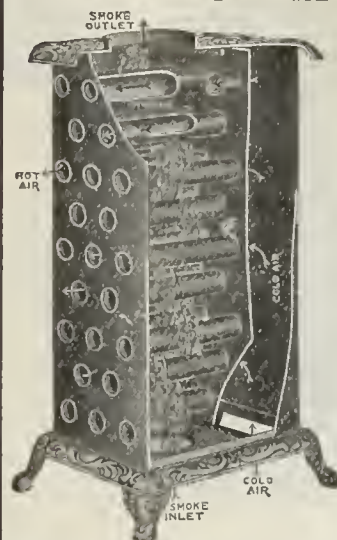
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SAVES TIME. SAVES MONEY.  
RESULTS UNEQUALED.

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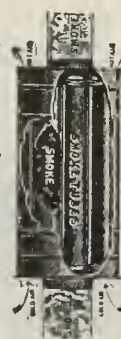
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Two Pounds—Eight Sizes.

GUARANTEED STRICTLY FIRST-CLASS.

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Sent postpaid upon receipt of the money.

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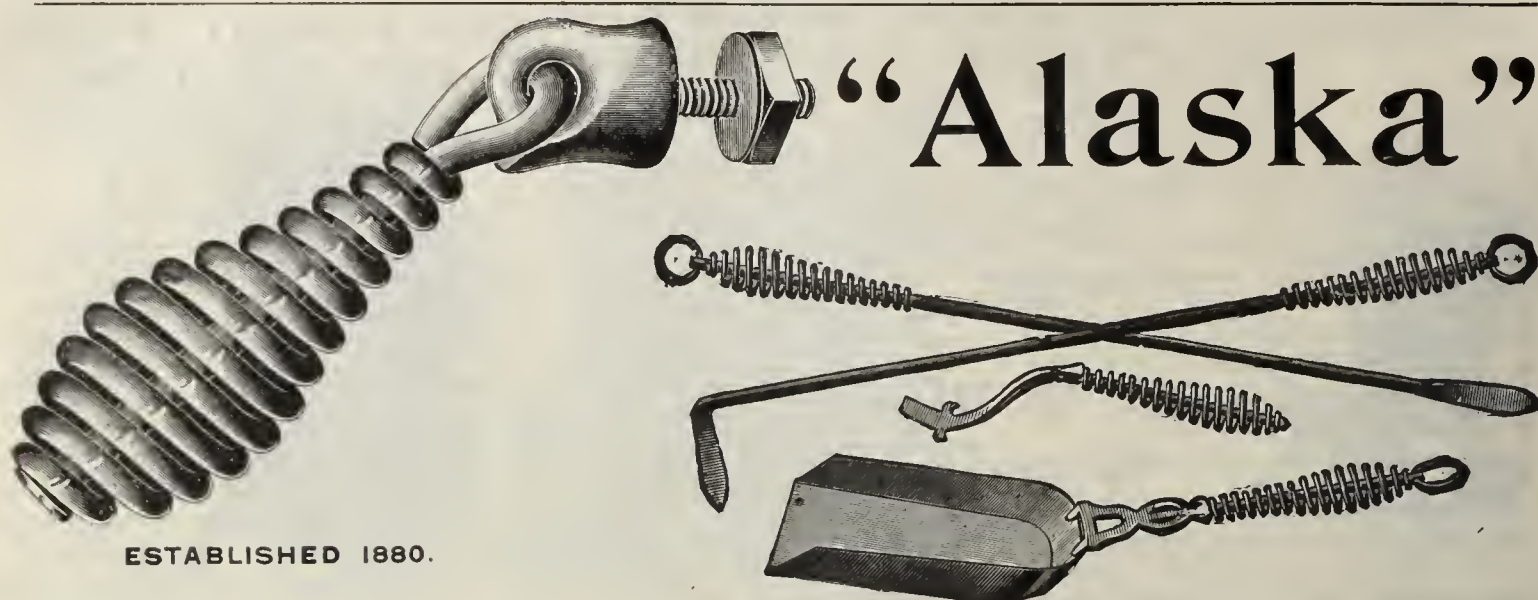
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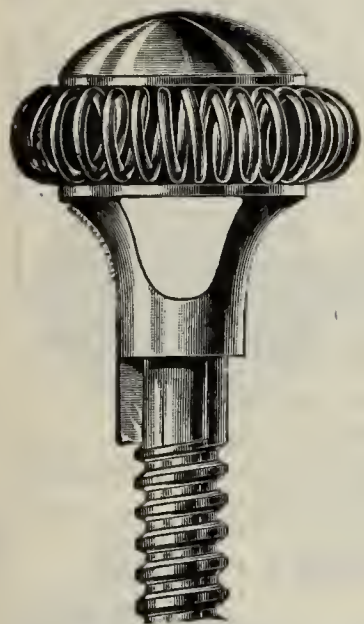
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We Carry in Stock Repairs for 20,000 Different Kinds of Stoves, Heaters and Ranges.

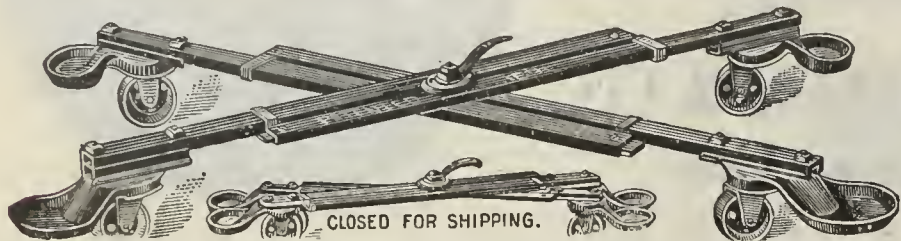
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The Model Stove Truck is out of sight when under a stove.



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Stoves and  
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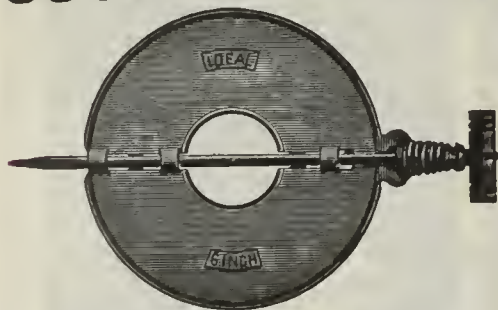
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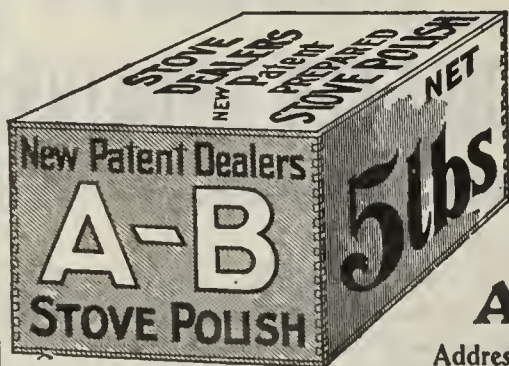
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promptly than any other house in exist-  
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SMOKE PIPE.

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It is impossible for this rod when in position to move either way.

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Fancy design, nickel plated body malleable iron.

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Either bent or straight ends;  
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Stands 500 lbs. pressure. Contracts and expands with the metal. Joints easily separated. Has three times bulk of Red Lead. For Steam, Water, Gas, Oil or Chemicals.

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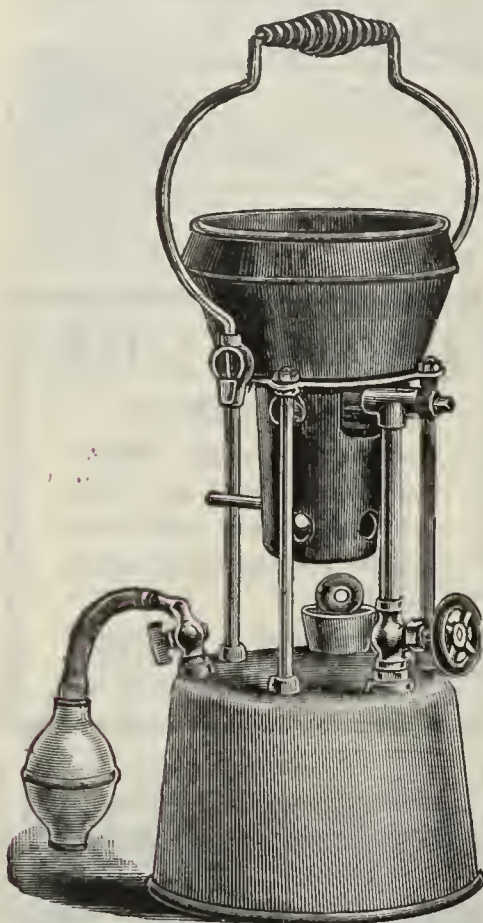
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The "DURO."



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Quantity shipments are packed in cases 6  
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Has Drawn Steel Reservoir  
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Improved Filling Plug.  
Safety Air Cock Joints.  
No Cast-Iron Parts.

It weighs less than any other Furnace now in use.  
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we have fully succeeded in producing *the best furnace made*. Most perfect in every detail. Of the highest efficiency. In operation, positive and reliable. Of substantial construction; combining lightness, strength and durability, at no more cost to the trade than the old style.

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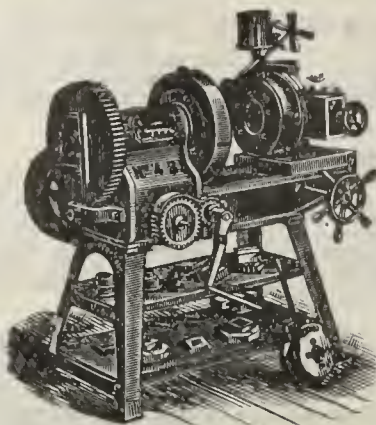
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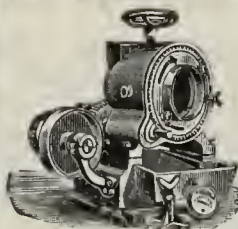
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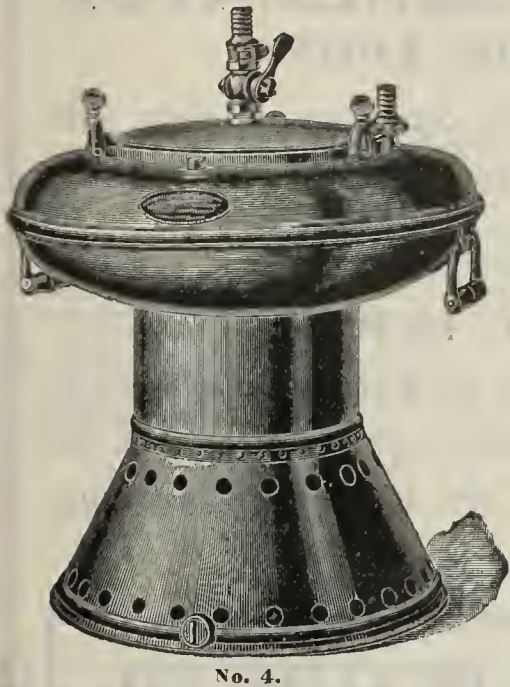


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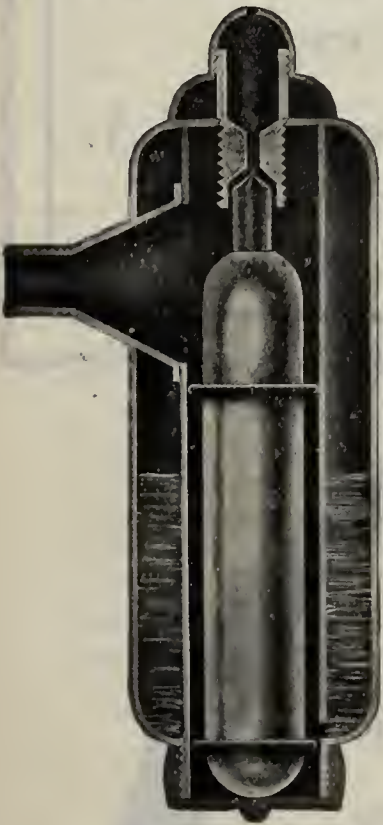
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IS  
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THE SEALED METAL FLOAT  
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CLOSES BY FLOTATION ONLY.

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Churning entirely avoided.  
Air forced through jet into soil pipe.  
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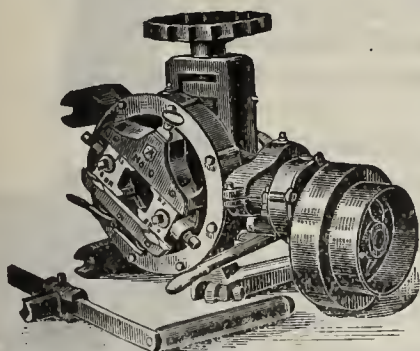


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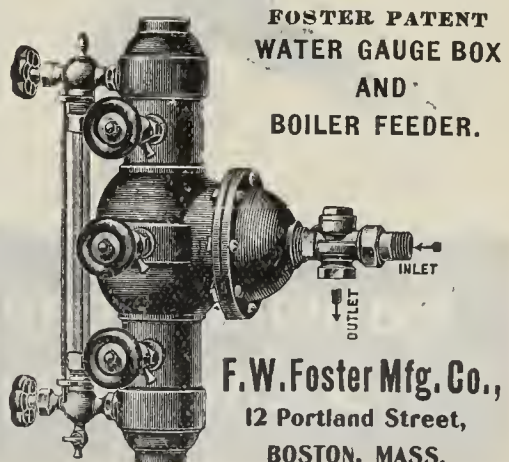
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PIPE THREADING MACHINES**  
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Moving parts run in oil in covered chambers.  
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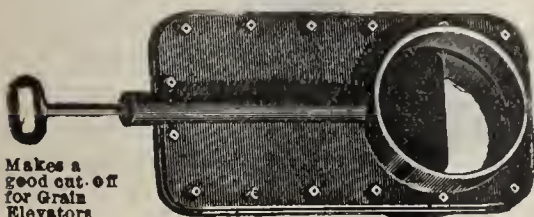
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good cut-off  
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WITH ORNAMENTAL CAST IRON FRONT.



Also made in combination with side wings and shield for brick set construction.

**A 77 PER CENT.**

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Any merchant, looking ahead to a better business should see that his Enameled Steelware and Tinware bears the mark of the largest makers in the world.

It means less competition---more trade---and a healthier cash drawer.

It means "the best goods on earth" and a letter to office nearest you will bring catalogues and prices.

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BOSTON.....33 Mason Building  
PITTSBURGH.....1201 Park Building  
CHICAGO.....1205 Fisher Building  
CINCINNATI.....22-24 Pickering Building  
ST. LOUIS.....1205 Chemical Building  
CLEVELAND.....312 The Cuyahoga  
LONDON.....Hastings House, Norfolk St., Strand

Volume LVIII.....No. 11  
Index to Reading Matter.....Page 63

## Pig Iron Production.

The troubles in the fuel supply had a marked effect on the production of pig iron during August. The monthly blast furnace statistics of *The Iron Age* show that, in spite of the fact that August counted thirty-one days, the output did not quite reach 1,500,000 tons, which is rather low for a long month. This amount would have been considerably exceeded had it not been for the short fuel supply. When coke and anthracite coal are once again regularly supplied it is safe to predict a monthly production close to 1,600,000 tons. The statistics of furnaces in blast on September 1, as compared with August 1, show a practically stationary rate of production. The total weekly capacity of the active furnaces at the beginning of the month is placed at 335,189 tons, a falling off of something like 5000 tons for the month. Meanwhile available furnace stocks are of the lightest, amounting to only 79,539 tons. A number of furnaces were blown out during August in various parts of the country, and several others were reported to be banked on September 1, while a few resumed operations in Pennsylvania and the South. On the seaboard consumers are now relying on regular supplies of foreign foundry iron, including some shipments from Canada.

## A Fee for Bids.

The custom of inviting several tradesmen to bid on a piece of work is a reasonable one which meets with the approval of all interested when practiced in a spirit of fairness. Whenever a piece of work is to be done those in charge of it naturally give some consideration to the ability of different tradesmen to complete the work should they be employed to do it. In consequence, a limited number, sometimes not more than two or three concerns with an established reputation, usually answer all the requirements of securing a fair competition for good work at a living price. Modern trade, however, has developed a custom which is unfair to the bidders and which imposes upon them an unnecessary expense. Not infrequently, particularly in large cities, bids are sought from every roofing, plumbing and heating contractor within reach, and in a number of instances when the bidders have met they have computed the time spent in making up the estimates and bids and found that the aggregate expense of preparing the bids amounted to more than the total cost of the work. This waste of energy, time and money expended in making up the estimate has led the Master Plumbers' Association of

Grand Rapids, Mich., to adopt a resolution for its members to make a minimum charge of 2 per cent. on the gross amount of each contract figured, whether from architects' plans or plans furnished by owners, except that no charge is made for this work by the contractor who secures the job. The effect of this resolution will be awaited with considerable interest by all who are invited to submit bids wherever they may be established in business. All the advantage of having a number of bids goes to the recipient of the bids, who should be willing to pay a small fee for the information the bids convey and the opportunity of comparing bids for the selection of the contractor to whom the work is to be given. This would seem to justify the effort to secure reimbursement for the expense of preparing such bids. The desirability of contractors being paid for this expensive work has been frequently discussed in different branches of trade, and should the effort of the Grand Rapids master plumbers meet with success there is little doubt that efforts will be made to establish the custom in other places and in connection with other branches of trade.

## Higher Cost of Building.

In view of the intimate relation of the building industry with the trades in which many of our readers are engaged, considerable interest will attach to the statement in the *New York Tribune* that the cost of building in the city has increased over 30 per cent. in the past ten years. In other words, a dwelling house that could have been erected for \$7000 in 1892 could not be duplicated to-day for less than \$10,000. One-half of this increase is credited to the higher wages paid to all classes of workmen in the building trades and the other half to higher cost of building materials. It is well known that wages in this industry have been advancing steadily of late years, until they are now, in some cases, nearly double what they were thirty or forty years ago. The following table shows the increase in wages for labor per hour, from 1869 to 1902:

|                                      | 1869. | 1879. | 1902. |
|--------------------------------------|-------|-------|-------|
| Bricklayers .....                    | 34    | 30    | 60    |
| Carpenters .....                     | 34    | 20    | 56    |
| Gas fitters.....                     | 25    | 30    | 50    |
| Hod carriers and other laborers..... | 21    | 17    | 37½   |
| Marble cutters.....                  | 32    | 25    | 55    |
| Marble polishers.....                | 20    | 17    | 44    |
| Masons .....                         | 34    | 30    | 65    |
| Painters .....                       | 27    | 25    | 44    |
| Plasterers .....                     | 39    | 30    | 62    |
| Plumbers .....                       | 27    | 30    | 50    |
| Roofers .....                        | 32    | 25    | 50    |
| Stone cutters.....                   | 34    | 30    | 55    |

It will be seen from the above that the cost of labor of every kind engaged in building operations has been augmented materially. Moreover, in many instances, in which wages are fixed by the day, the amount of work done has been curtailed by the cutting down of the length of the working day to eight or nine hours. Thus the condition of the artisan has as steadily improved as the burden on the employer has become more weighty. As a recent example, the journeymen carpenters in New York and vicinity demanded and received an advance in wages, from September 1, from \$4 to \$4.50 a day, while the hod carriers secured an increase of 2½ cents an hour from the same date. This increase of a few cents an hour for the various classes of labor, which has been



a constant occurrence in recent years, means the expenditure of many thousands of dollars more in the erection of a large building than would have been charged up to the builder under previous labor conditions. Prices for nearly all kinds of building materials are unusually high, structural steel, which is the most important item in the construction of the big modern fire proof structures, having doubled in cost since the beginning of this year. Moreover, there is a pronounced scarcity of steel, and delay in the receipt of this material is a common cause of complaint among builders and contractors, for such delays add materially to the expense of a job. Under the circumstances it is somewhat surprising to find that there is so much activity in building at the present time. Probably this may be due to the prevailing impression that costs are more likely to increase than to decrease in the near future. At the same time it is natural to infer that a considerable amount of proposed building has been deferred until costs are lower. Had the prices of labor and materials been reasonable this year there is every reason to suppose that the volume of building would have been enormously ahead of any other year in the history of the industry.

### The South African Market.

The importance of Africa as a market for the manufactures of the United States is illustrated by some figures just received by the Treasury Bureau of Statistics showing the commerce of the United Kingdom with Africa. Considerable satisfaction has been felt in the fact that the value of exports from the United States to Africa has grown to \$33,000,000 in the fiscal year 1902. But a comparison of these figures with those of the exports from the United Kingdom to that continent shows that our exports to Africa still form a very small proportion of the importations of the Dark Continent. The total value of exports from the United Kingdom to Africa in 1901 was \$157,000,000, or practically five times as much as the exports from the United States to Africa. Of this exportation of more than \$150,000,000 worth of merchandise to Africa, nearly two-thirds went to the southern part of the continent—namely, to Cape Colony, \$62,700,000, and to Natal, \$29,500,000. The next section in importance is Egypt, to which the exports from the United Kingdom were \$31,238,000, while British West Africa took \$13,222,000 worth of British products. That the current fiscal year will witness a rapid growth in the exportation of American goods to South Africa is practically certain. The expansion of trade in this direction has already begun, and with the gradual reconstruction and development of the Transvaal and Orange River territories, now under British rule, the demand for our manufactures in that quarter is likely to show a steady increase in the future. And with the development of the territories formerly administered by the Boer Republics will naturally go the opening up of the other large British territories and protectorates in that region, Mashonaland, Rhodesia, Bechuanaland, Swaziland, &c., all of which possess natural resources that will inevitably be exploited, attracting thither numbers of Europeans and Americans, whose needs and comforts will create a call for many of the manufactured products of this country. South Africa is a market worthy of close attention and earnest cultivation.

### THE ANTHRACITE MINERS' STRIKE.

The strike of the anthracite miners is now running through its eighteenth week. It has lasted much longer than had been generally anticipated, and is therefore developing numerous features of interest. It is growing to strongly resemble the strike of the Amalgamated Association last year in the mills of the United States

Steel Corporation. In both cases the main object of the strike was to secure recognition of the union. Other points involved were far less conspicuous and by no means sufficiently prominent to constitute real grievances. In both cases it was also assumed by the strike leaders that the stock market interests of the employers were of such magnitude as to impel a speedy settlement for fear of the demoralization of the price of stocks. Again in both cases the organization of workmen had gradually worked up to the possession of advantages which should have been deemed satisfactory for a considerable period of time or until some act on the part of the employers appeared to threaten the loss of a portion of what had been won. And now another point of strong similarity presents itself in the probability of an abrupt termination to the coal miners' strike by the act of their own leaders, who are reported to be on the point of calling it off for the purpose of saving their organization. There are always hot heads who talk of "last ditches and last crusts of bread," but their policy would be ruinous to the labor cause. They would lose the last vestige of an organization if they had their way, as men are going to work in such numbers that in the likely event of an early scramble for employment too few will be left outside to maintain it.

The leaders may deny it, but they must be seriously disheartened to think that neither Wall street influences nor political powers nor even the pressure of consumers has the slightest effect upon the attitude of the coal mining companies. Financial losses have not terrified them and threats of hostile legislation have not made them abate in the least the position originally taken by them. They have been abused by demagogues and lectured by the well meaning but misinformed in press and pulpit, yet have sturdily maintained the stand that they propose to manage their business and not have it managed for them. The public is being put to great inconvenience, important business interests are suffering, manufacturers are sadly hampered for lack of material, and in innumerable ways the strike is so affecting public and private interests that if it was possible ever to cause outside pressure to be invoked to end a strike it would in this case. But the operators maintain that they cannot yield to the men in justice to the interests they represent. It is now time for the suffering public to exert pressure on the strikers.

Some important lessons can be learned from the two great strikes of last year and this. Labor organizations can learn the lesson which may be of great benefit to them if they will heed it. That is that when great manufacturing or producing interests are confronted by a powerful labor organization it is not necessarily to be assumed that the latter can take the position of dictating terms. Convincing demonstration has been made that neither a possible decline in the stock market nor order books filled with profitable contracts will compel or induce unsatisfactory conditions to be accepted. A strike for labor supremacy has been shown by these occurrences to be most ill advised. It would have been far better for the Amalgamated Association last year or the United Mine Workers this year not to have placed themselves in such a position that a strike seemed to be necessary to preserve the appearance of consistency. When demands were refused and refused in a manner to indicate decision, it would have been well to withdraw them and wait for future developments. Big manufacturing corporations and big mining companies have shown themselves not so vulnerable as had been supposed. Another lesson taught by these two labor controversies, as well as by the building strike in Chicago in 1900, is the assurance that labor organizations will not yet be permitted to control the great business interests of the country. Such organizations have accomplished considerable benefit in various ways, but some developments have been of a character to cause serious apprehension lest such control of industrial affairs be secured as to break down the methods through which this country has developed its natural and mechanical resources and become pre-eminent among the nations of the world. It has been shown in three successive years that the employers of this country have the necessary grit to resist when aggressions are carried too far.—*The Iron Age*.



## GOOD FOR THE STOVE BUYER.

Notwithstanding the advance in the price of iron and the increase in the cost of everything that enters into the production of stoves, the market throughout the year has been a good one for the stove buyer. This branch of trade is again occupying the active attention of all engaged in it, and it is a matter of common knowledge that many of the stoves recently shipped were on orders taken in the early part of the year at prices prevailing at that time, previous to the advances in the cost of production that have since taken place. It is probable that reflection on the transactions of the year has prompted a well informed stove manufacturer to write us that some stoves and ranges are being sold at lower prices than they were selling at some time ago. Evidently this correspondent is dissatisfied with such a state of affairs and feels that the stove manufacturers should get together, as the manufacturers in other branches of the trade have done, and agree to secure a more profitable return for their product. For a long time past the general complaint of the trade has been that stoves are sold at too close a margin, and that there is no money in the business as it is being conducted. From the fact that no successful effort has been made to change the conditions the inference might be drawn that the prices of stoves are satisfactory. It is improbable, however, that such a conclusion would be agreed to by the majority of the manufacturers. If, as our correspondent states, stoves are selling at prices lower than good judgment would warrant, in consideration of the advances in the cost of production, there can be but one conclusion, and that is that it is good for the buyers of stoves. This, however, depends on the price at which the stove dealers dispose of their stock. If they, like the manufacturers, are selling their stock too low, the prices ruling cannot even be considered good for the stove buyer. It is to be hoped, however, that the fall season will be a satisfactory one in point of profit to the retailers, even if the manufacturers may feel occasion to regret the small returns on their business for the year.

## NOMINATIONS FOR STOVE CAPTAIN.

While some in the stove trade are quietly advocating the combination that has been so much talked about, there are others who have no hesitation of giving their views on the subject when their identity is not disclosed. Some of the latter have been moved to express their feelings in writing, and below we give the letter received from a manufacturer whose record is of the progressive type:

If the stove business needs a captain, and it would seem that it needed one badly, then what kind of a captain should it have? Look about and see the captains who have made a success of other large enterprises, and it will enlighten the average mind as to the quality of man needed. You will see men at their head who not only have been successful themselves, but who became so by being well grounded in every detail of their business. Men of broad and comprehensive minds; men who are encouragers of confidence; men who can be polite, pleasant and agreeable, yet shrewd, and whose word is carefully given, but when given is sacred and true.

Can we find such men in the stove business? Yes! lots of them. But there are more who lack the executive ability and wide comprehensive experience requisite in a man to place at the head of a stove consolidation than of those who have these and all the other necessary qualities, combined with this last and all important one: a man to whom honesty, integrity of character and self respect are of more consequence than money, yet whose energy is in the ultimate success of the business of which he is the head.

Grange Sard of Rathbone, Sard & Co. most truly possesses all of these qualifications, and as close seconds come Lazard Kahn of Kahn & Bro., George H. Barbour of the Michigan Stove Company and A. W. Walker of the Walker-Pratt Mfg. Company. These four men would lead the consolidation of the stove business to success and not only command the confidence of the people interested in the stove business, but that of the general

public as well. Grange Sard knows the details of the stove business from early life, and with his wide experience of the requirements of the different sections of the country, East, West, North and South, combined with that of Lazard Kahn, George H. Barbour and A. W. Walker, no section of the country would be neglected or suffer.

These four men are men of manly, broad gauge, high grade qualities, who now carry on large business interests and to whom the larger interest of consolidation would not be such a bound upward as to take away their breath or cause them to lose their heads. It would be more of a question of whether the consolidated interests could get them to serve in this executive capacity rather than whether those interests would have them. Such men are sought for, and as they know themselves what they are worth and what they can do, they will be found reluctant to rush into responsibilities of such magnitude. If consolidation comes may such men be at its head—men who are honest, good and true—is my earnest wish.

## FIRST ANNUAL MEETING OF THE AMERICAN STOVE COMPANY.

The first annual meeting of the American Stove Company was held at the offices of the Standard Lighting Company Division, Cleveland, on Monday, September 8, at which time the following directors and officers were elected for the ensuing year:

*Directors:* A. E. Ambs, John Ringen, E. C. Baxter, C. I. Dangler, D. Ed. Dangler, C. A. Stockstrom, E. H. Stockstrom, Louis Stockstrom, Geo. F. Fiske, F. L. Alcott, W. H. Boardman, Geo. M. Clark, H. J. Trenkamp, Henry Trenkamp, Sr., O. P. Moon, Paul Schneider and Kenneth K. McLaren.

The directors elected the following officers:

*President,* C. A. Stockstrom, St. Louis, Mo.

*Secretary,* H. J. Trenkamp, Cleveland, Ohio.

*Treasurer,* Geo. F. Fiske.

*Vice-Presidents,* Geo. M. Clark, F. L. Alcott and E. H. Stockstrom.

*General Manager, Cleveland District,* F. L. Alcott.

*Master Mechanic, Cleveland,* Paul Schneider.

*General Sales Manager,* E. H. Stockstrom.

*Assistant Manager, Cleveland District,* O. P. Moon.

The following were elected as managers of divisions:

Geo. M. Clark & Co. Division, Chicago, Geo. M. Clark.

Dangler Stove & Mfg. Company Division, Cleveland, Ohio, D. Ed. Dangler.

Monarch Stove & Mfg. Company Division, Mansfield, Ohio, E. C. Baxter.

National Stove Company Division, Lorain, Ohio, O. P. Moon.

Quick Meal Stove Company Division, St. Louis, Mo., Louis Stockstrom.

The Ringen Stove Company Division, St. Louis, Mo., E. H. Stockstrom.

The Standard Lighting Company Division, Cleveland, Ohio, F. L. Alcott.

The Schneider & Trenkamp Company Division, Cleveland, Ohio, Henry Trenkamp, Sr.

Twin Burner Vapor Stove Company Division, St. Louis, Mo., A. E. Ambs.

The capital stock of the company is \$5,000,000. A dividend of 5 per cent. was declared, \$50,000 was charged off from machinery and pattern account, and \$160,544.86 was passed to surplus, making the surplus account \$358,144.86.

A banquet was given to the directors by Messrs. Dangler at the Union Club on Monday night, and on Tuesday afternoon and evening they were tendered a banquet at the summer home of Paul Schneider, at Bedford, Ohio.

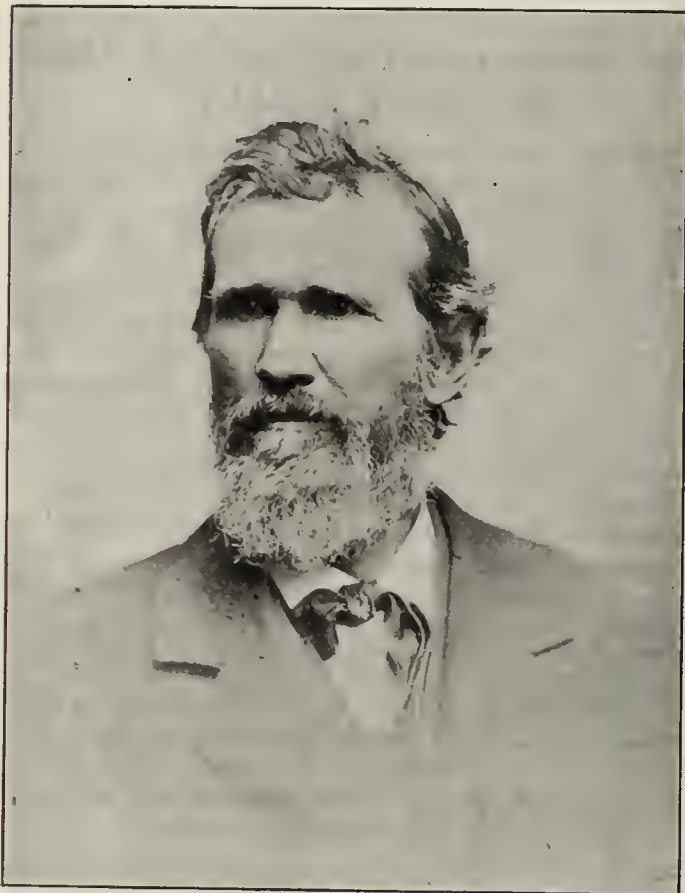
An attractive advertising novelty now being furnished their agents by the Michigan Stove Company is a tin whisk or broom holder, intended to be tacked in a convenient place. It is decorated in colors, has the Garland trade-mark on the front and is not only tasteful but highly ornamental.



## DEATH OF JAMES DUFFY.

The stove trade of the country will learn with deep regret of the sudden death of James Duffy, a pioneer stove manufacturer of Hannibal, Mo., which occurred a few days ago from heart trouble while on the lawn at his residence in that city. While he had been in poor health for something like a year, Mr. Duffy had not been altogether incapacitated for business and was daily found at his desk looking after the interests of the company with which he was so long identified. Just previous to his death Mr. Duffy had expressed himself as feeling much brighter than for some time past, so that his sudden taking off came as a shock to his many business friends and associates.

Mr. Duffy, whose portrait we present herewith, was born in Ireland, November 11, 1827, and came to this country with his parents when a child. He was indentured as an apprentice in the stove molder's trade in 1841, and began work as a journeyman in 1846. In 1853 he went from Troy, N. Y., to Quincy, Ill., as a stove



JAMES DUFFY.

molder in the foundry of what is now known as the Comstock-Castle Company, where he remained until 1863, when he engaged in business with Messrs. White and Bonnet. In 1866 the company were dissolved and Mr. Bonnet and Mr. Duffy built what was then the third foundry in Quincy. Mr. Bonnet drew out in 1884 and the Duffy-Trowbridge Stove Company were organized. About 15 years ago the foundry was removed to Hannibal, Mo. When the company were organized Mr. Duffy was made the president, which position he retained to the time of his death. His long experience in the trade and his keen observation resulted in his bringing out many improvements in connection with stove making. The goods which his company turn out have enjoyed an enviable reputation, not only locally, but through an extended territory.

Mr. Duffy was held in high esteem by all those with whom he came in contact, both in a business and a social way. One of the stove manufacturers of Quincy recently paid him a high compliment by saying of him, "He is a 'grand old man.' As England looked upon Gladstone as the 'grand old man' in politics, so the stove founders of Quincy look upon James Duffy as the 'grand old man' in the stove business." Mr. Duffy was a member of the Methodist Episcopal Church in Quincy and of Herman Lodge, A. F. and A. M., in the same city, having never transferred his membership in either to Hannibal. He leaves a widow and two daughters.

## Gas Stove Wrinkles.

An interesting feature of the meetings of the different associations of gas manufacturers is the presentation of explanations of practical methods of accomplishing anything of interest to the members that have been gathered by the custodian of the "Wrinkle Department" during the year. The following "wrinkles" were presented at the tenth annual meeting of the Pacific Coast Gas Association:

*An Adjustable Valve for the Regulation of the Gas Supply to Burners.*—The feature consists of a separate needle valve with which the gas orifice may be enlarged or reduced in order to mix the proper quantity of gas and air for perfect combustion. When the gas range has been set in a locality where there is a high pressure of gas, to reduce this pressure heretofore a governor has generally been placed at the meter to cut down the supply of gas. This has been found unsatisfactory, as by the use of the governor the velocity of the gas is cut down, making poor combustion at the burner. By this appliance, when the gas stove is set in place each burner is adjusted according to the pressure of gas, so that no matter whether the pressure is increased or diminished the burners operate satisfactorily and no waste of gas is experienced. Another advantage of this adjustable valve is that a servant can turn the valve wide open and not increase the consumption of gas. This idea was originated by one of the former members of the San Francisco Gas Company, and it has been used by them in all high pressure districts very successfully for a number of years.

*The Way to Connect Large Gas Ranges.*—The hotel and other large ranges having six burners or more on top, wherever the pressure of gas is not sufficient to have all the burners running in full force, by making a double connection from the service pipe—that is, by connecting the range with the service pipe at each end instead of at one end, as is usually done with regular gas ranges—it has been found that the efficiency of all the burners is largely increased. All gas ranges of large sizes are so constructed as to allow this double connection whenever it is found necessary.

*The Kind of Oven Burners to Use When the Pressure is Very Low.*—When the oven burners of a gas range go out after being lighted, from lack of a good supply of gas, by using drilled burners instead of sawed this difficulty is overcome in a great many cases.

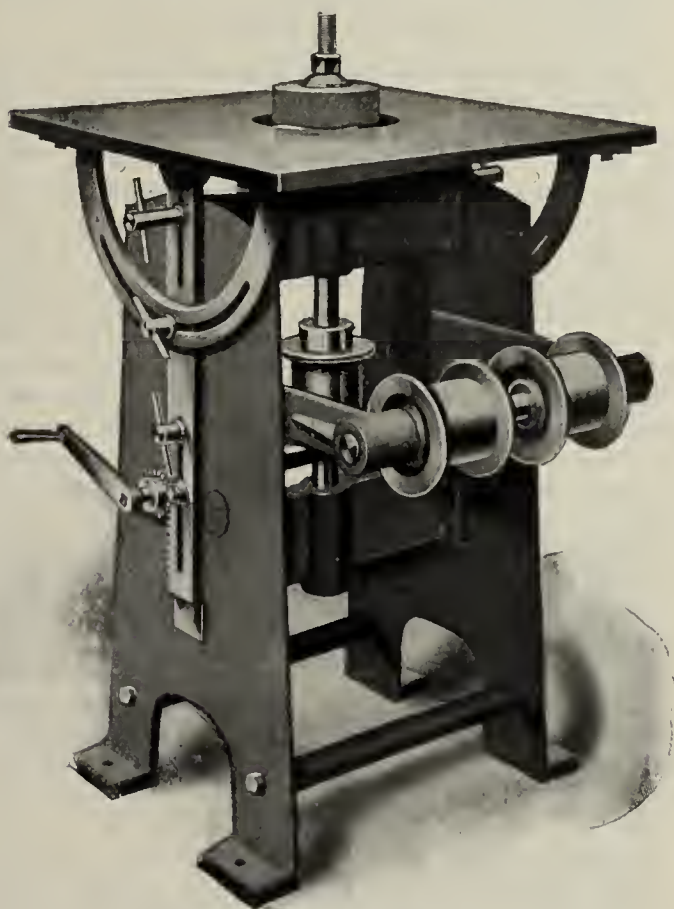
## Some Adler Gas Stoves.

The fall and winter catalogue known as No. 36, which has just been issued by the H. Adler Company, with office and salesrooms at 241 First avenue, Pittsburgh, Pa., is an exceedingly attractive publication of 48 pages, bound in paper covers of rather unique design. The matter relates especially to the Acme, Lustre and Duquesne stoves and to the company's lines of gas ranges, cookers and ovens. The manufacturers have added many new and handsome designs to their already extensive assortment, and make the claim that they now produce the most complete line of gas appliances in the United States. One of the new designs is the Relda gas stove with closed cast front and center tube arrangement. It is made in three sizes and in the same number of styles of finish. The Acme gas radiator with heavy cast top and base is referred to as a new construction, and it is made in eight sizes. The Westminster and Tunis gas stoves have been improved for this season's trade, as have also the Continental and Yorktown, these latter being intended for using natural gas only. The Monogram is a new pattern of stove designed for using natural gas and is made in two sizes. Many other goods are illustrated and described, including an interesting assortment of fire place heaters and portable constructions. The closing pages of the catalogue are given up to some comments on hot air heating with natural gas as fuel; to illustrations of natural gas burners; polished brass and black iron fronts for natural gas fires, gas ranges, cookers, ovens, hot air plates, &c. The last page of the cover shows an exterior view of the offices and warehouse of the company as well as interiors of various departments of manufacture.



### The Tucker Vertical Grinder.

The need has long been felt among stove manufacturers and others for a machine that will grind castings vertically. To meet the demand for such a tool the Tucker Machine Company, 224 East Ninth street, Cincinnati, Ohio, have brought out the vertical edging and inside grinding machine illustrated herewith, the construction and operation of which are clearly indicated in the cut. The machine is provided with a tilting table 2 feet square, which can be set by the operator at any desired angle. The table has also a raising and lowering device which gives a range of 4 inches in either direction. The machine is also adapted for grinding the inside of circles, scrolls, &c., as it carries a wheel as small as 2 inches, and from 2 to 8 inches in diameter by 4 inches face. The countershaft has 14 x 3 and 8 x 3 T. and L. pulleys and is calculated to make 750 revolu-



*The Tucker Vertical Grinder.*

tions a minute. The height of the machine is 36 inches. It is specially designed for use in stove foundries, range works and similar manufacturing establishments.

### The B. C. Bibb Stove Company.

Bound in paper muslin covers and illustrating the leading lines of stoves, ranges, furnaces, fire place heaters, hollow ware, &c., which they manufacture, the B. C. Bibb Stove Company, Baltimore, Md., have issued an attractive volume of 120 pages. In the arrangement of the matter the order often followed by manufacturers has been departed from, and in the early pages skeleton cuts of a cook stove and a range are presented with the various parts numbered and accompanied by suggestions intended to facilitate the ordering of repairs and the prompt shipment of goods. General directions for setting and operating stoves and ranges are also given with a view to securing the most satisfactory results. Again, the cook stoves are first considered, instead of the ranges, the leading place being given to the Grand Emerald, an attractive construction made in three sizes. It is followed by the Stonewall, made in two sizes; the Severn, made in three numbers; the New Maryland, the Virginia, the Southern Girl and the Maxim, the latter being made in one size only, and intended for burning wood. A varied assortment of ranges is presented with the Tuxedo in the place of honor. This has six 8-inch boiler holes in the top surface, and can be furnished with or without water back, according to requirements. It is

followed by the Harford, a substantial range of attractive exterior, in which nickel plays a prominent part. Other goods include the Improved Maryland, the Newport, Cecil, Avalon, Arcadia, Athol, Oriole and Improved Daisy ranges, the two last named being intended for using coal exclusively. A line of steel ranges is also shown, together with double oven constructions offered in portable form and also for brick setting.

The heating stoves cover the usual lines, prominent among them being the Hemlock, a handsome oak for wood or coal; the Druid, a high grade modern air tight; the Wildfire, another air tight with end feed door; the Warwick, a square parlor stove which can be used as a single or double heater; the Magnum, a heavy low priced stove, together with other specialties in the way of box, Todd, cottage parlor and laundry stoves.

An interesting chapter describes the valuable features of the Bibb sanitary hot air furnace, which the company manufacture and for which very strong claims are made. It is offered in five sizes portable form and two sizes for brick setting. For many years the company have been noted as manufacturers of fire place heaters, and in the closing pages of the catalogue under review considerable attention is given to their specialties in this line. Reference is made to the Lombard improved fire place heater, embodying a novel arrangement of the interior flues; the Arundel, an attractive modern design with the latest improvements; the Capitol, with back reversible flues; the Radiant, which is referred to by the company as their smallest production in the way of a fire place heater, and the Grand Diamond fire place heater for hard or soft coal, which has been in the market for something over 30 years. A valuable feature in connection with the description of these goods is found in the diagrams showing the proper manner of setting Bibb's original Baltimore made fire place heaters. The catalogue concludes with reference to portable grates for open fire places, hollow ware and lists of fire brick for cook stoves, ranges, heaters, &c., as well as Tuttle & Bailey's registers and ventilators. The company also give a list of heaters and stoves which have been retired from the market but for which they can furnish repairs.

### A. J. Magoon & Son Enlarge.

A. J. Magoon & Son, 313 Weybosset street, Providence, R. I., have bought the stock, fixtures, patterns and good will of the King Erle Heater Company, manufacturers of the King Erle and Silver Lake furnaces. This business will be added to the former line of A. J. Magoon & Son and the manufacture of the King Erle heater continued. They have about completed a large addition to their premises on Chapel street, directly in the rear of the Weybosset street store and connected therewith. The addition gives them a frontage of 50 feet on Chapel street and is 50 x 75 feet, three stories, built of brick. It will be used as a warehouse, manufactory and storeroom. The total floor space, including basement, is about 15,000 feet. It is expected that the increased capacity will enable the firm to handle more promptly their large stove repair business, and will generally afford them better facilities for their entire line.

THE JOHN B. MORRIS FOUNDRY COMPANY, Cincinnati, Ohio, are sending out a special catalogue devoted to Furnace Repairs of which they carry a large stock. It is of a size convenient to carry in the pocket, and is bound in paper covers with muslin back. The Furnaces for which Repairs can be furnished are arranged with names in alphabetical order, each being followed by the name of the manufacturer, and the parts for which Repairs can be had, together with their weights. The company state that the unusual success which they have had in the past in promptly supplying perfect fitting Stove and Range Repairs caused them to decide to enlarge their field and add Furnace Repairs to their line. After months of preparation they announce that they are today in a position to supply Repairs to fit the leading Furnaces made in the United States, and will continue to add new patterns as fast as circumstances would seem to warrant.



### The Charles Smith Company.

We have received from the Charles Smith Company of Chicago, Ill., a copy of a 32-page catalogue and price-list which they have issued relating to the Hero furnaces and Smith's hot water specialties, which are made in an interesting variety. The furnaces are for different kinds of fuel; the Improved Hero being intended for soft coal or wood. It is constructed of cast iron with cup joints, deep ash pit and Smith's triangular revolving grate. The fire pot and dome are heavily corrugated, thus doubling the radiating surface and insuring greater durability. The radiator is made in two parts and connected by means of a rib joint, giving it greater strength to resist unequal or sudden expansion. It is also mounted in such a way as to avoid the possibility of gas leakage. Another form of the Improved Hero has revertible double flue radiator, and is intended for burning hard coal. Smith's Cast Hero, 200 Series, is intended for using hard coal or wood and embodies features which cannot fail to attract the attention of the trade. Another member of this series is designed for burning soft coal or wood and the flues are constructed especially with a view to using soft coal. Another specialty is the Hero room heater, intended more specially for schools, churches, public buildings and stores which have no basements, also for halls and auditoriums located on upper floors. Still another specialty to which attention is invited is the new Hero combination hot air and hot water heater, in which the radiator has revertible flues so that the products of combustion are forced to pass to the front ends of the radiator and return to the center before reaching the smoke pipe.

The latter half of the catalogue is taken up with illustrations of Smith's hot water specialties, which include the Little Giant, made in four sizes, and which can be placed in any furnace; the Circular Giant, made in six sizes, from 14 to 24 inches, and intended to heat from one to eight rooms with hot water; the Maltese heater, which can be used in any surface burning stove or furnace, and two or more of which can be coupled together, and Smith's laundry water heater, which, as the name indicates, can be used in any laundry stove. Reference is also made to the Porcupine water heater for gas, Ideal registers and miscellaneous goods. Several of the illustrations are full page and represent vertical sections through city houses, one showing Smith's Little Giant connected to two radiators and expansion tank, another showing Smith's Giant connected to two radiators and flushing tank for expansion, while a third shows the water heater connected to two radiators, also supplying hot water for domestic purposes.

### ODD PLATES.

GEORGE M. CLARK & Co., 73 Lake street, Chicago, manufacturers of Jewel Gas and Gasoline Stoves and Chicago Jewel Steel Ranges, have just completed the decoration of their sample rooms and offices. The colors employed are cream white with cherry red trimmings, the combination being particularly striking and pleasing. The sample Stoves exhibited now appear to much better advantage. This company report a very substantial demand for their Chicago Jewel Steel Range, which is one of this year's production. It is meeting with much favor at the hands of the trade, and the indications are that it will prove to be one of the company's best sellers. A very striking muslin sign is being sent by this company to their customers. It is printed in three colors—red, yellow and black—and is adapted for either inside or outdoor display.

THE employees of the Quick Meal Stove Company, St. Louis, Mo., have organized a sick benefit fund, which has been incorporated under the laws of the State as the Quick Meal Employees' Mutual Aid Association.

THE CHAMPION STEEL RANGE COMPANY of 131-137 Viaduct, Cleveland, Ohio, are sending out a ten-page folder calling attention to the merits of their Champion and Marquart Steel Ranges, for which strong claims are made. The goods are offered in the usual modifications and in three finishes—japanned, polished steel or

Russia iron. The constructive features include pouch feed, cast reservoir, which is detachable, elevated warming closet and patent double flue hot blast, which it is claimed saves one-third in fuel. The nickeling is done on copper, which makes two thicknesses and is said to give a much better finish. One size of the Marquart is intended for hotel use, it having ten boiler holes in the top surface and is provided with double ovens.

THE PENINSULAR STOVE COMPANY, Detroit, Mich., are making the Winner Peninsular four-hole Wood Cook in several sizes and with ovens measuring 15, 16, 17, 19 and 21 inches respectively. The Stove is made with Never Break steel base, two piece-oven bottom, which will not warp or crack; Never Break steel oven rack, capacious fire box with large feed door, cemented oven top, smooth swing hearth, loose bottom grate and swing front grate. A written guarantee is given with each Stove. A leaflet which the company are distributing intimates that dealers ought to be interested in Peninsular goods.

THE WALKER & PRATT MFG. COMPANY, Boston, Mass., have issued what they term the "Heating Stove Number" of the *Crawford News*, which they occasionally publish in the interests of their leading specialties. The front page shows an old Heating Stove which they say may be 100 or perhaps 150 years old, which came from down Amesbury way and is, of course, made for burning wood. This relic of ancient days is on exhibition in the company's office, and interested visitors at the Hub are invited to call and see it and compare it with the company's latest Heating Stoves. The second and third pages of the *Crawford News* are devoted to a statement of the leading features of the Crawford Oak and the Cosy Crawford, the latter being a sheet iron surface burner with ornamental cast front. The last page is entitled "Antiquity," and answers questions as to the length of time the company have been in business. Accompanying the copy of the *Crawford News* are several folders, one telling about Dampers of Cooking Ranges, another is entitled "Crawford Reasons," and the third, "What Good Cooks Say of Crawford Ranges."

THE SUN STOVE COMPANY, Detroit, Mich., are erecting a two-story addition in the rear of their plant on Bellevue avenue, which will be used for warehouse purposes. The contract for the work of erecting has been given to G. L. Seelbinder & Co.

A LEAFLET just issued by the Estate of P. D. Beckwith of Dowagiac, Mich., calls attention to some of the leading points in Round Oak Steel Ranges, which are manufactured in great variety and adapted to meet many requirements. The Range is of handsome exterior and is intended for using coal or wood as a fuel. The body is constructed of Wood's hammered polished steel, and the parts are so put together that the Range will hold the fire for a long time, thus effecting a saving in fuel. The claim is made that the Range will bake like a brick oven.

THE S. M. HOWES COMPANY, 40-46 Union street, Boston, Mass., have recently issued a catalogue and price-list relating to heating. Confectioners' and Laundry Stoves, for wood and coal, also Portable Galvanized Ovens and Farmers' Boilers. The matter is neatly printed on good paper and bound in colored covers. The goods represent the lines handled by the company as well as those of their own production. Accompanying the catalogue are circulars relating to the New Process and Standard Oil Heaters, the Erie Hollow Ware and the Boston Stove Pipe and Elbows, for all of which the Howes Company are selling agents.

A STATISTICAL REVIEW of the commerce of the Philippine Islands for the year 1901, published by the Bureau of Insular Affairs of the War Department, shows that the total value of Stoves and Ranges imported into the islands in 1901 was \$4666, of which the United States furnished \$2042.

A FOUR-PAGE folder, issued by the Co-operative Foundry Company, Rochester, N. Y., illustrates the Economic and the Maple Leaf Steel Ranges which they are offering, adapted for hard or soft coal or wood. The Economic is a modern Steel Range embodying the latest features and is ornamented in a rich and effective manner. The Maple Leaf is a cheap Steel Range having



duplex grate, cast linings, good sized oven and six boiler holes in the top surface. An attractive Oak Stove, to which the manufacturers are calling attention by means of a leaflet, is the Model, made in four sizes with full size fire pots.

THE SIMPSON STOVE & MFG. COMPANY, Pittsburgh, Pa., are sending through the mails a card calling attention to the fact that this is the season when people are thinking about Gas Heating Stoves, and they raise the question if dealers have considered the contents of a catalogue relating to this class of goods which the company have recently issued. Special reference is made to the Simpson Multiple Action Stove, which embodies many interesting features of construction and which cannot fail to interest the wide awake dealer.

F. M. BORDEN & BROTHER, 118-127 North Second street, Philadelphia, Pa., are sending to the trade a postal card calling attention to their Ideal and Reliable Gas Ranges, and also inviting investigation of their extensive line of Gas and Oil Heaters. The house have given some attention to the selection of their line of gas and oil goods, owing to the increased popularity and demand for first-class constructions in this line.

THE S. OBERMAYER COMPANY of Cincinnati, Ohio, are having a series of leaflets and advertising novelties prepared to be sent to the trade each month. They have commenced the work by sending out blotters containing colored reproductions of paintings. They are also sending out a leaflet containing a reprint of P. R. Ramp's paper on "Economy in the Foundry," read before the Boston meeting of the American Foundrymen's Association. Another leaflet contains a treatise on Foundry Facings and Blackings.

THE TWIN BURNER STOVE COMPANY, 906-910 South Ninth street, St. Louis, Mo., are making the Twin Burner line of Steel Ranges with all the modern improvements and are offering them in a very attractive dress in which nickel plays a prominent part. A new catalogue which has been issued tells all about the goods and emphasizes the salient features. The company are selling agents for the Radiant Home Steel Ranges for Missouri, Southern Illinois, Kansas and Oklahoma Territory.

WHITE, WARNER COMPANY, Taunton, Mass., refer to the fact that the great heating capacity and long wearing powers of their Household Furnace are due to the brick lined, heavy wrought iron fire pot, combined with their own patent auxiliary horseshoe radiator. The company claim that with a Household Furnace the dealer is prepared "to meet the stiffest proposition that ever happened, and win."

THE UNION STOVE WORKS, 70 Beekman and 66-68 Gold streets, New York City, are offering the trade an extensive assortment of Cylinder Stoves, representing six different types and 63 varieties. One of the most attractive in the line of Globe Stoves is the Astor Gem, which is made in four sizes and with or without magazine. It is intended especially for heating offices, stores, railroad stations, restaurants, lecture rooms, chapels, club rooms, &c., and is finished in a way to render the Stove an ornament to the room in which it is placed. It is intended for burning any fuel, and the claim is made that even the self feeders make good wood burners by simply lifting out the magazines. The company manufacture a very large line of Heaters of all kinds, and they intimate that timid dealers who delay placing their orders this year are liable to disappointment in obtaining stocks of goods.

THE Good Will Steel Range, made by F. A. Klaine & Co. of Cincinnati, Ohio, combines the latest improvements, such as large feed doors; duplex grate, which can be removed without disturbing the lining or water front; large ash pit door and capacious ash pan. The smoke box is made of cast iron, as also are the enameled reservoir and reservoir casing, which is one of the important features in Steel Range construction. The fire box linings are sectional and the oven is thoroughly braced. The Good Will Range is of attractive exterior and is offered in the usual modifications.

THE STANTON HEATER COMPANY, Martin's Ferry,

Ohio, state that one of their customers placed such a high estimate upon their furnace that he has named his last son "Stanton" and calls a photograph, showing him with his son standing in front of the Heater, "The Three Stantons." The company have issued a catalogue relating to their goods and will send a copy thereof to any one on application.

A LETTER from D. G. Cooper, Pequabuck, Conn., includes the statement that the seed from which the popular oven thermometer grew was from a newspaper article that appeared in December, 1884, and his first patent was taken out in 1885, when the manufacture of the now well-known Cooper Oven Thermometer began. This Thermometer is attractive in appearance, satisfactory in operation, and through its popular service is well known not only to the Stove manufacturers and dealers, but in many kitchens. Mr. Cooper, through his advertising matter and circulars, has done much to explain the use and convenience of Oven Heat Indicators, so as to create a demand for them that has grown to some proportion recently.

THE HELIOS-UPTON COMPANY, Peabody, Mass., are sending to the Stove manufacturers a card cut to the size and shape of their Standard Oven Thermometer and bearing a picture of it, so that it is a good *fac-simile*, and being tied with a red ribbon, can be hung up for a reminder when the time for buying new stock arrives. By untying the ribbon a unique catalogue of several pages is disclosed.

### The White Mountain Freezer Company.

The White Mountain Freezer Company, Nashua, N. H., are making extensive improvements in and additions to their plant. During the past few weeks they have completed a new foundry to take the place of the one burned in July of last year. The building, which is of brick and steel, with slate roof, is 200 feet long by 50 feet wide, with all necessary rooms for tumbling and snagging castings, storage, &c. The foundry is equipped with a 64-inch Colliat cupola, and a No. 5 Root's blower of latest pattern. An addition to their brick tin shop building of 40 x 100 feet, three stories, has just been completed which will double the capacity of this department of the works. The company also have plans drawn for a new brick galvanizing and tinning building, 30 x 100 feet, with all latest equipments, and state that this building will be completed and in commission before October 1. With these additions to their already extensive plant the company claim their capacity will be increased about 50 per cent., so they will have no trouble in producing a sufficient quantity of freezers of their well-known brands to supply the trade promptly at all times.

### A New Gasoline Torch.

The Clayton & Lambert Mfg. Company, Detroit, Mich., are offering the new gasoline torch known as No. 36, of which we give an illustration. This torch is designed



A New Gasoline Torch.

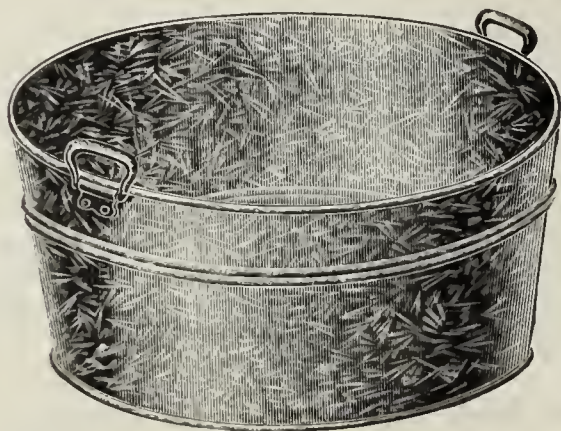
for the use of mechanics who desire a powerful burner capable of doing heavy work out of doors in cold or windy weather. The makers state that the generator has great power and will produce a clear blue, intensely hot flame; is under perfect control of the operator and is economical in the use of gasoline. The tank is of



quart size, drawn out of heavy brass, free from seams. All fittings are heavy, reinforcements being used to make an extra strong tank. A brass air pump of the latest design screws into the tank and is submerged in gasoline, which aids in keeping it cool and also protects it from injury. The No. 36 torch is supplied in polished brass or nickel plated and is recommended as specially adapted for brazing the wires in rubber tires.

### L. & G. Galvanized Ware

The Lalance & Grosjean Mfg. Company, 19 Cliff street, New York, have recently expanded their line of galvanized sheet steel household ware materially. Here-with we present illustrations of a few of the goods now being offered by the concern. In Fig. 1 is shown a gal-



L. & G. Galvanized Ware.—Fig. 1.—Galvanized Washtub.

vanized wash tub, substantially made to withstand the exigencies of hard usage. These tubs are made in three sizes—namely, 20 x 11, 22 $\frac{1}{4}$  x 11 and 24 $\frac{3}{4}$  x 11 $\frac{1}{4}$  inches. They are provided with strong handles and are finished in the best possible manner. A galvanized Windsor dipper is shown in Fig. 2, the handle of which is securely



Fig. 2.—Galvanized Windsor Dipper.

riveted on the body. These dippers are made of  $\frac{3}{4}$ , 1 and 2 quart capacity. The pit bottom tea kettle, Fig. 3, is stamped in one piece and is of very durable construction. The kettles are made in four sizes of 4, 5, 7 and 8 quart



Fig. 3.—Galvanized Pit Bottom Tea Kettle.

capacity, with diameters at pits 6, 7, 8 and 9 inches respectively. Among the other galvanized goods made by the concern are coal shovels, steel baskets, garbage cans, chamber pails, water pails, foot tubs, trays, fire

pails, watering pots, refrigerator pans, dust pans, chambers, wash basins, measures, funnels, scoops, soap dishes, &c.

### Stove and Hardware Dealers.

E. E. WILLS has succeeded L. W. Snider & Son, dealers in Stoves, Hardware, &c., Exeter, Neb.

WAGNER BROS., Odessa, Mo., have disposed of the Stove and Hardware business which they have conducted for the past 19 years to Cable & Ferguson, who continue at the old stand.

THE COLUMBUS HARDWARE COMPANY, Columbus, Ga., have been succeeded by the Bush Hardware Company, who will continue the wholesale and retail business in Stoves, Tinware, Hardware, Agricultural Implements and Sporting Goods. The store is a new one, and is 50 x 300 feet in dimensions, two stories high.

CHAS. SCHUBER has purchased the Hardware and Tinware business of C. M. McMurray & Co., Geraldine, Texas. Mr. Schuber buys and sells for cash.

D. PHILLIPS & SON have lately embarked in business in La Harpe, Kan., handling Stoves, Tinware, Shelf Hardware and Sporting Goods.

MANCHESTER & GILL, Stove, Hardware, Harness, Sporting Goods and Furniture dealers, Skidmore, Mo., have been succeeded by Manchester, Gill & Dodds. They now occupy a room 50 x 60 feet, in addition to the one occupied last year. Since moving into the new building they have added furniture and undertaking to their former business.

F. L. BELZER has succeeded Belzer & Doss in the Stove, Hardware, Tinware, Farm Implement and Sporting Goods business in Rock Rapids, Iowa.

THE LELAND HARDWARE COMPANY have lately commenced business in Leland, Miss. The company have been chartered with a capital of \$10,000, the following being the officers: C. C. Dean, president; J. W. Thompson, vice-president, and J. A. Gary, secretary-treasurer and general manager. The line carried by the concern embraces Stoves, Shelf and Heavy Hardware, Crockery, Queensware, Wagons, &c.

KING & HEATH have purchased the Stove, Tinware, Hardware, Agricultural Implement, Sporting Goods and Wagon and Buggy business of C. B. Crawford, Shellsburg, Iowa.

P. F. WRIGHT & SON, Stove, Hardware and Farm Implement dealers, Wakita, O. T., have dissolved partnership, and the business is now being conducted by P. F. Wright under his own name. Mr. Wright has lately completed a new building for the accommodation of his Implement stock. It is 30 x 120 feet in dimensions.

CRANDALL & COON are successors to W. D. Crandall, dealer in Stoves, Tinware, Hardware, Agricultural Implements, Harness, Lime, Cement, &c., Leonardsville, N. Y.

J. E. NYE, dealer in Stoves, Hardware and House Furnishing Goods, West Union, Iowa, has recently disposed of his business.

A. O. DUNCAN has sold his stock of Stoves, Hardware and Farming Implements at St. José, Texas, to Dunbar & Johnson. The new owners sell strictly for cash, except in the Implement line, where well secured notes are accepted.

TRUE & BLANCHARD COMPANY, Newport, Vt., wholesale and retail dealers in Stoves, Hardware, Pipe, Fittings, &c., advise us that they would appreciate receiving catalogues and price-lists from manufacturers and dealers in Toys.

W. B. BERTELS, SON & Co., Wilkes Barre, Pa., are distributing blotters advertising their well-known Sun Dinner Pails. These are made in a number of sizes and styles. Special attention is called to the new spring ear which the company are putting on all their Pails, composed of a solid brass spring, which keeps the lid tightly in place.



## THE PLUMBERS' SUPPLY ASSOCIATION.

Some interest will attach to the deliberations of the different manufacturers of plumbing supplies this week, when the Association of Manufacturers and Jobbers of Plumbing Supplies held their quarterly meeting in New York. This meeting brought together manufacturers especially interested in the various lines of goods used by the plumber in constructing a modern plumbing system. It included those who are interested in the manufacture of brass goods, soil pipe, sanitary earthen ware, enameled iron goods and an infinite variety of specialties which go to make up the stock of the supply dealer. Their attention was given to the matters which affect the trade with a view to eliminating petty annoyances and such detrimental customs as are bound to creep into any trade, and to secure united effort for the betterment of all conditions that affect their interests. Notwithstanding that price is always a very important question, there are other factors in the transaction of a business in which dollars and cents do not come up so prominently to the buyer and seller and which have a most important bearing on the cost of carrying on a business and the profit and loss account at the end of the year, and these were discussed. Apparently the trade, so far during the year, has been transacted without anything more interesting cropping up than the relations between the wholesale and retail trade, and while there exists some difference of opinion between the plumbers and the supply houses as to the extent of the protection given the trade, it is not of sufficient importance to have been brought prominently to the attention of those who attended this meeting.

## THE PRICE OF HEATING APPARATUS.

It is a matter of history that at the last meeting of the manufacturers of house heating boilers and radiators a compromise was made in the interest of general harmony, and the advance in the price of boilers and radiators decided upon was but one-half of what had been agreed upon in the early deliberations of the body. As has been previously noted, the steam fitters anticipated this advance, and there are not wanting among the more careful buyers of heating goods some who are not satisfied that the advance in the price of such goods will stop at the point reached about a month ago. This opinion is justified by the continuance of the conditions of cost, and should these goods be advanced to the point originally contemplated there will be little cause for surprise. There is a feeling, however, on the part of some manufacturers that an advance having been made, to make another advance at this time would have a demoralizing effect which would be detrimental to this branch of trade. Should this opinion gain sufficient strength it is improbable that higher prices will be made, notwithstanding that some expect such action and that many agree that the conditions prevailing would justify it.

## FIRST TOURNAMENT OF THE EASTERN TRADE GOLF ASSOCIATION.

One of the most enjoyable meetings of the representatives of the heating and plumbing supply trades was at the first tournament of the Eastern Trade Golf Association, held on Thursday afternoon. The members are especially indebted to Frank B. Barrett, a member of the Fox Hills Golf Club on Staten Island, through whose courtesy they enjoyed the use of the 18-hole links of the club, covering 6066 yards, and being one of the finest in the vicinity of New York, having natural hazards with no artificial bunkers and exceptionally large greens of 100 feet square. In playing over the course a continual change of fine scenery is presented by the hills, the long vistas and a grand view of New York harbor. Through the kindness of W. W. Lowrey, the chairman of the Green's Committee, the course was in fine condition, and every hospitality of the club was placed at the disposal of the players, while their com-

fort was further provided for by the fine dinner which he arranged to be served.

The players arrived early, although all through the morning and the early afternoon recruits from the trade put in their appearance. The West was represented by H. M. Cole, Charles K. Foster, George E. Downe and Chauncey L. Williams, secretary of the Western Trade Golf Association. Owing to the absence of President C. H. Simmons and Vice-President C. W. Woodward and the illness of Secretary H. A. Smith, the treasurer, Frank C. McLain, and Captain E. C. Molby managed the tournament so as to win the hearty congratulations of the members.

The morning was occupied with the qualifying round, for which pairs were soon arranged, and the scores made were as follows: Charles K. Foster, 88, which score made him the first winner of the fine bronze figure of a golf player, presented by W. A. Russell & Co. of Detroit for the best score for the first 18 holes, open to Eastern and Western contestants, and to be won three times consecutively to become the property of the winner; W. H. Thayer, 90; Frank H. Simmons, 91; Frank B. Barrett, 93; P. R. Jennings, 101; A. W. Maine, Jr., 101; W. L. Herendeen, 102; Chauncey L. Williams, 104; Frank C. McLain, 105; E. C. Molby, 105; H. S. Martin, 106; Howard Hovey, 109; George E. Downe, 109; W. C. Marsh, 114; E. F. Glore, 123; P. H. Seward, 124; H. W. Walton, 126; A. A. Ainsworth, 128; H. D. Carter, 156. On the completion of the morning's play the dinner was enjoyed, at which the spirit of *bon camaraderie* prevailed.

In the afternoon play was resumed, resulting in the Association Challenge Cup being won in the first flight by P. R. Jennings, with a score of 89, while W. H. Thayer, with a like score, won the Bruce & Cook Silver Cup for the runner up. Mr. Thayer also won the President's Cup, presented by C. H. Simmons for the best medal play for 36 holes, with a score of 179. Frank B. Barrett, with 94, and Frank H. Simmons, with 96, were also in this flight, and Mr. Simmons, with a score of 187, won the second prize for medal play, a fine cup presented by the *Engineering Review*. Mr. Barrett, with a like score, won the third prize for medal play, a fine cup presented by *Domestic Engineering*.

In the second flight, Frank C. McLain, with 101, won a fine silver cup presented by the Pierce, Butler & Pierce Mfg. Company, and A. W. Maine, Jr., with 106, won one of the pewter cups given by the association for the runner up. E. C. Molby, with 108, and W. L. Herendeen, with 110, were also in this flight. The *Plumbers' Trade Journal* gave a handsome silver cup for the third flight, which was won by Harry S. Martin, with 99, Howard Hovey, with 105, getting the runner up pewter mug. W. C. Marsh, with 114, and E. F. Glore, with 123, were also in this flight. The silver cup given by *The Metal Worker* for the fourth flight was won by Howard W. Walton, with 106, P. H. Seward, with 125, getting the pewter mug for the runner up. H. D. Carter, with 126, and A. A. Ainsworth, with 132, were also in this flight. Frank K. Chew of *The Metal Worker*, not qualifying, played with Frank S. Hanley in the afternoon, the respective scores being 157 and 164. H. M. Cole arrived in the afternoon after all the flights were off and went over the ground, making a score of 90.

The handsome pewter stein presented by the association for a driving contest was won by Captain Molby, with an average of 244 yards for three strokes. This contest closed the sport for the day, and after the expressions of thanks and congratulations to Captain Molby, Frank B. Barrett and W. W. Lowrey, every one voted the tournament not only a success, but a grand opportunity for establishing acquaintances of a character to extend confidence in the trade. After pleasant greetings between old friends and new acquaintances the farewells were spoken. The first tournament of the Eastern Trade Golf Association will be long remembered by many who witnessed the contests as well as those who participated in them as an affair that can be repeated with benefit to the trade and frequently. On the home journey Charlie Foster promised on behalf of the American Radiator Company a punch bowl set for a contest between teams of five or more from the Eastern



Trade Golf Association and the Western Trade Golf Association, to be played on neutral links, and Harry S. Martin offered the Willow Brook links at Dunkirk, N. Y. Should such a contest be arranged prizes for individual contests will be forthcoming.

### PLUMBING AND STEAM SUPPLY LEAGUE.

Notwithstanding that President Behrer, a month ago, sent out a circular letter to the supply houses in the vicinity of New York who were connected with the Plumbing and Steam Supply League in the bowling tournament, which brought so much pleasure to all concerned last winter, there have been fewer acknowledgments and entries to the league for the coming winter than there should have been. The vacation season is now ended and President Behrer and Captain Emery, aided by ex-President Haff and ex-Secretary Wilson, are now drumming up those who were interested in this tournament, and the treasurer, Fred. Lowe, 90 Beekman street, New York, is likely to be more busy receiving the necessary \$10 for an entrance fee, and the names of men from which the team will be selected to represent the supply houses with which they are connected. A feature of the league this year will be the entrance of two trade paper teams to contest for the prizes. *The Metal Worker* has entered one team and the *Plumbers' Trade Journal* the other team, and prizes to be competed for have been offered by both papers. The indications are that a larger number of teams will constitute the league this year, and an increased interest will be taken in the contest. Inasmuch as the officers intend limiting the number of teams which will constitute the league, those who are desirous of taking part in the contest should look to it that their entrance fee is paid at the earliest opportunity and full compliance with the rules observed.

### Manual for Steam and Hot Water Fitters.

The Magee Furnace Company, Boston, Mass., have favored us with a copy of the "Magee Manual for Steam and Hot Water Fitters." The manual consists of 72 pages, with several blank pages in the back part for memoranda. The first 37 pages are devoted to an enumeration of the merits of the Magee line of steam and hot water heaters, which are made both in the vertical sectional and round horizontal sectional forms. These heaters are made in an extensive variety of sizes, adapted for heating the largest buildings as well as for smaller work. The company's tank heaters are designed for furnishing hot water for apartment houses, as well as for heating conservatories, and include a line of laundry stoves adapted for heating water and also a large number of smoothing irons. Several pages are occupied by supplies, such as water gauges, water columns, damper regulators, expansion tanks, thermometers, &c. Thirty pages are devoted to useful tables and information for the assistance of the heating contractor in designing and installing steam and hot water heating plants, showing pictures of different radiator connections, connections with boilers and methods of taking branches from heating mains. The manual will be a valuable pocketbook for the practical steam fitter.

### A Car Heating System.

The Peoria & Pekin Union Railroad Company are installing a new coach heating plant to care for trains in the yards at Peoria, Ill., while not in use during the cold weather. This is necessitated by the fact that the plant now in use has been worn out by the constant train movement and the settling of the tracks over the principal supply pipe. When the yards were relaid some time ago the main gauntlet track was laid directly over the supply pipe of the heating track, and the constant vibration caused by the trains passing over this track, together with the settling of the earth has given rise to broken connections and other troubles without number until the company have determined to relay it entirely.

Twelve hundred and fifty feet of pipe will be laid to

secure the connections with the strings of coaches on the various tracks and the work will consume about two weeks' time. Of this amount about 900 feet will be 3-inch pipe and the remainder will be 1½-inch pipe. In addition to this the increased heating capacity required by the erection of the new freight house has made it necessary to purchase a new vacuum pump, with a capacity of 16,000 square feet radiation, and this will be installed at the same time, though it will not be necessary to increase the boiler capacity.

### The Second Wonder Acetylene Burner.

Those who have made a specialty of the sale and equipment of acetylene lighting plants recognize the desirability of a burner which perfectly consumes the gas and avoids any accumulation of carbon at the burner tip, involving frequent cleaning. In the accompanying illustration we show the Second Wonder burner patented by D. M. Steward and made by the State Line Mfg. Company, Chattanooga, Tenn. These burners are made for a single flame of ¼, ½, ¾ or 1 foot of gas per hour. They can also be furnished for a group of 2, 3, 4, 6 or 8 flames, each burning from ¼ to 1 foot, as de-



*The Second Wonder Acetylene Burner.*

sired. The Second Wonder burner consists of the usual brass cylinder for screwing on the fixture, and supports a lava tip, the distinctive feature of which is that the circular groove which constitutes the air inlet is cut from beneath in such a way that it is impossible for particles of dust and dirt to reach the gas jet and deflect the flame. This is said to prolong the life of the burner and to aid in the production of a flame of strong illuminating power and regular in size and shape. Samples of these burners for test are mailed by the manufacturers on receipt of 25 cents.

THE PHILIP CAREY MFG. COMPANY of Lockland, Ohio, are sending to the trade several pamphlets devoted to their line of manufactures. One is especially devoted to Magnesia and Asbestos Coverings, not only for steam and hot water heating mains, but for boiler covering, and for covering the pipes of hot air furnaces. The catalogue also shows a variety of Asbestos Rope and Wick Packing, Sheet Mill Board, Asbestos Sheathing, Hair Felt, Cement and especially constructed Packings for pistons and gaskets. Another catalogue is devoted to the use of their Pipe Coverings for ammonia and brine pipes of refrigerating plants. A little pamphlet, entitled "Practical Experience," consists of testimonials from individuals, firms and corporations using the Carey Pipe and Boiler Coverings.



## WRINKLES FOR THE PLUMBER AND STEAM FITTER.

BY K. S. R.

The man who is alert enough to profit by his spare moments can do many little things for his customers that will keep them coming to his shop in spite of the efforts of competitors to secure their trade. Study your customer, the whole family and their needs, suggest whatever would add to their comfort and name the price for it. Use your knowledge of your business for their comfort. It will brighten your wits and increase your value to yourself in the additional revenue that comes from the special work that you will get. The more you know how to do the more you can do in special lines that do not interfere with your regular trade. Brighten up and try making a profit out of your wits. As an incentive here are two profit winners that I have used that may be of interest to somebody:

### A RADIATOR WARMING CLOSET.

Warming closets for food and dishes are convenient and desirable for use in winter, and would undoubtedly be more generally used in connection with steam radiators if it were not for the considerable expense involved, and for the fact that the size of the radiator must be increased in order to preserve the requisite amount of heating surface to heat the room. This extra bulk of radiator, moreover, cannot be reduced during the summer months, when neither radiator nor warming closet is in use. An effective and slightly substitute, which may be removed when desired, may be provided at a comparatively slight expense. A stamped steel portable oven of proper size, such as is used on gas and oil stoves, is fitted with lugs and clips to make it set firmly on the radiator top. It may then be taken to the bicycle shop and enameled in any desired color and style to suit the finish of the room or pantry in which it is to be placed. Such a warming oven will repay many times the expense involved in the degree of comfort it affords.

### TO REPAIR A CAST IRON SINK.

It sometimes happens that the ordinary cast iron sink becomes broken or cracked while in use. Obviously, the best way to remedy such a condition of affairs is to replace the broken sink with a new one. The writer was called on to repair an old style odd sized sink which was split almost the entire width of the bottom. New wood work and copper work had been fitted to the sink only a few days before, and the owner objected strongly to the removal of the old sink. The following successful repair was quickly made:

As the iron of which the sink is composed had been under strain, one edge of the break stood higher than the other, and it was necessary to fasten them together. Two  $\frac{1}{4}$ -inch holes were carefully drilled and countersunk in the line of the break, and the parts were drawn together with 3-16-inch bolts and washers. A mixture of glycerin and litharge of the consistency of cream was then applied to the break on both sides, and the cast iron was carefully heated by means of a gasoline torch until the litharge had hardened. Another application of litharge and heat completed a repair which has stood the test of hot and cold water for more than a year and a half.

In the case of single holes all that is necessary is to ream and countersink the holes and insert a stove bolt with rubber and iron washer beneath, taking care that the rubber washer shall bind closely on the thread of the bolt. A steel sink may be soldered, or may be repaired by means of a copper rivet carefully flattened.

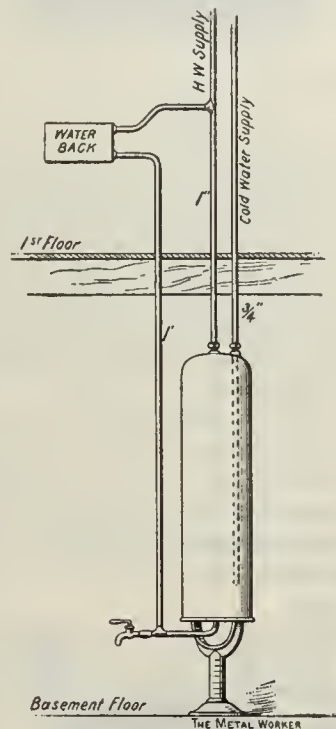
### A New Heating Force.

A most extraordinary discovery, says one of the dailies, is reported as having been made by Dr. Goldschmidt in Germany of a new heating force of almost incredible power. It results from a compound that was accidentally discovered in some experiments that Dr. Goldschmidt was making for the great Krupp gun works. The compound is simply aluminum filings mixed with oxide of chromium. If a lighted match be touched to it a heat of 5400 degrees F. is instantly cre-

ated, a heat, says a scientist, that the human mind cannot form a conception of. It would melt mountains into streams of liquid fire. And yet it may be controlled and regulated for use in factories, foundries and machine shops, for melting, welding and shaping masses of iron and steel. It is equally valuable for producing rare and costly metals in a state of almost absolute purity. And why might it not be put in capsules, one of which would heat a room in ten seconds?

## BOILER BELOW RANGE.

Through the courtesy of F. R. Porter, Southampton, N. Y., we are enabled to present herewith a sketch showing the piping used for connecting the water back in a range with a boiler on the floor below. The piping is very simple and can be readily understood, and interest in it will be increased when it is known that a system of this character has been installed by Mr. Porter and is working satisfactorily. It will be seen that the hot water pipe from the water back is connected with the hot water service pipe from the top of the boiler, which aids in securing a movement of the water when any of the hot water faucets on the system are used. It would



Boiler Below Range.

not be advisable to pipe on this plan where there are no fixtures above the range, unless the hot water pipe from the water back be carried up at least 10 or 12 feet above the range and connected with a short return bend and pipe carried down and connected with the boiler, as shown. If, however, there are fixtures on the second floor the method of piping illustrated will be found satisfactory. Mr. Porter states that it helped him on one occasion out of a very tight place and it may be of similar value to others under similar conditions.

## Valves, Injectors, Oil and Grease Cups, &c.

A large catalogue by the Lukenheimer Company of Cincinnati describes their most complete line of brass and iron steam specialties and engineering appliances. Since issuing their last catalogue in 1898 the company have greatly increased their facilities, and expect by the end of this year to occupy new factory buildings which will be unsurpassed by any similar structures of their kind. The Lukenheimer automatic injector is a simple, durable, efficient boiler feeder not liable to get out of order, and is fully guaranteed in every particular. It is stated that this injector will deliver more water per pound of steam than any other, which means a direct saving in fuel. The injector can be relied upon to start instantly after a temporary interruption of either the steam or water supply.



### A New Steam and Water Heater.

The increasing popularity of steam and hot water for heating small residences has created a demand among the steam fitters for boilers especially suited to this work. The form that has been found best suited to this demand is round and naturally of a simple construction, so that the all important question of cost would be satisfactorily answered. The J. H. McLain Company of Canton, Ohio, have recently brought out



A New Steam and Water Heater.—Fig. 1.—The Columbia Water Heater.

boilers to answer these requirements, and in Fig 1 we present a sectional view of the Columbia water heater, from which it will be seen that it presents a large surface directly exposed to the fire. The same boiler when equipped with more trimmings and made with a slightly higher dome for a steam chamber is designated by the company as the Lehigh steam heater, a broken view of which is shown in Fig. 2, the construction being the same in both heaters.

The products of combustion rise from the fire, as shown in Fig. 1, and pass through an opening at the front to a horizontal flue which encircles the heater at the top, and passing each way make a complete circuit of the heater before issuing through the smoke outlet at the rear. These heaters are made in four sizes, with

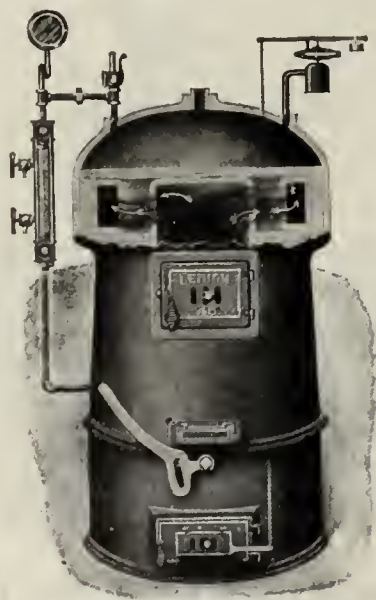


Fig. 2.—The Lehigh Steam Heater.

13, 16, 19 and 22 inch grates, and for hot water are rated to carry 225, 400, 550 and 650 square feet of direct hot water radiation. They can furnish 300, 520, 650 and 780 gallons of hot water per hour respectively when used for furnishing hot water for apartment houses in connection with hot water storage tanks. The same heaters are rated to carry 150, 250, 350 and 450 square feet of direct steam radiation. The height of the water line varies from 39 to 43½ inches in the largest size, adapting these heaters for low cellars, as the height to the top of the tapping boss in the steam heaters is 48 inches. The company have recently issued a catalogue giving full dimensions and particulars, not only of the Columbia and Lehigh boilers, but of the entire line of heating apparatus which they manufacture.

### Washington State Master Plumbers.

The Association of Master Plumbers of the State of Washington completed their annual meeting at Seattle on Thursday, August 28, by the election of the following officers:

*President*, W. J. Creevey, Seattle.

*Vice-President*, P. Joyce, Ritzville.

*Secretary*, D. H. Lyman, Seattle.

*Treasurer*, Ben Olson, Tacoma.

*Representatives to the National Convention*: W. B. Coffee, Tacoma; W. Westover, Everett; E. B. Lambert, Spokane; A. M. Goddard, Tacoma.

A considerable portion of the time of the convention was taken up in preliminary work toward the revision of the by-laws of the organization. At the close of the convention the delegates enjoyed an excursion to the Puget Sound Navy Yard at Bremerton, and a picnic at Evergreen Park. The banquet held at the Hotel Stevens Café on Thursday evening was one of the most enjoyable features of the convention, and its success reflected great credit upon the Banquet Committee, consisting of H. Lustad, J. E. Young, H. Coughlin, H. Steckles, Leo Turner and H. Rautman.

### A New Plumbing and Steam Supply Catalogue.

Catalogue No. 61, consisting of 514 pages, and bound in a red cloth cover, has just been issued by the Rumsey & Sikemeier Company, St. Louis, Mo. The first page presents a view of the company's new building, which contains 110,000 square feet of floor space. This is followed by brief notes for the assistance of those who order goods from the house. A well arranged index occupying ten pages precedes a telegraphic code covering goods handled by the concern. The first section is devoted to brass goods, including various styles of bibs, stops and supply and waste cocks, laundry tray bibs, sill and curb cocks and lavatory and bath cocks in a variety of styles and finishes of the compression and Fuller pattern, followed by shampoo cocks, basin wastes, chain stays, sprinklers and a variety of smaller goods used in the equipment of bathrooms. Brass ferrules, boiler couplings, solder nipples, union joints and hydrant nozzles precede a variety of cast iron hydrants and street washers, service boxes and valve boxes. The next 60 pages of the catalogue are occupied by copper linings, steel clad enameled iron bathtubs and foot baths and sitz baths, with bathtub seats, supply and waste fixtures, towel racks, soap cups, sponge racks, mirrors and shower baths. In another section are shown galvanized iron and copper range boilers, designed to be heated by water backs and provided with coils for heating with steam. Tank heaters and gas water heaters for connection with boilers, and also of the instantaneous type, are included in this portion of the catalogue. Laundry trays of enameled iron, stone and earthen ware are followed by painted and enameled cast iron and steel sinks for kitchens and pantries, slop sinks of various materials, cast iron cesspool traps, urinals and enameled iron lavatories; also handsome lavatories of marble and elaborately constructed supply and waste fixtures. Another part of the catalogue is devoted to nickel plated and brass traps, drawn lead drum traps, grease traps and a variety of patented traps. These are succeeded by urinals and urinal stall equipments in marble or slate, with all the brass and iron fittings required for their installment. Water closets of earthen ware and enameled iron of the plainest type to the most elaborate, with flush valves and low down closets, also range closets, occupy another section. Other lines of goods shown include soil pipe and fittings, plumbers' tools and a variety of ornamental drinking fountains and filters; also wrought iron pipe, pipe fittings and steam fitters' supplies, including steam traps, reducing valves, radiators and steam and hot water boilers, together with a variety of steam valves. These are followed by tools for steam fitters, including pipe cutting and threading machines and a variety of tools for all purposes. The catalogue closes with 50 pages devoted to gas lighting apparatus and fixtures, including the Eagle automatic acetylene generators and suitable burners for use with these goods.



### New York City Notes.

Brooklyn applicants have been in the majority for the past two months before the Examining Board of Plumbers, more appearing from that borough than from all the others combined.

\* \* \*

Robert Thain, formerly a well-known Columbus avenue master plumber, attempted suicide last Tuesday while temporarily insane.

\* \* \*

The price of oakum, oil, peppermint, &c., will remain the same, although the store of W. H. Crookson & Brother, who supply most of the plumbers with this line of goods, was destroyed by fire last Monday afternoon.

\* \* \*

Jasper & Goebel have the contract for plumbing the new Hegeman Drug Building at 202 to 204 Broadway.

\* \* \*

Young & Myers are practically doing a new job in the Sharkey Hotel at Lexington avenue and Twenty-fifth street.

\* \* \*

The Joint Conference Committee is now the hardest worked committee in Manhattan Branch, settling the differences arising between the masters and journeymen relative to wages, nonunion men, &c., arising under the new agreement.

\* \* \*

Among the new jobs under way are the following: Francis Callaghan, two tenements on Broome street, near Mulberry; Gus Jackson, an apartment house at 318-322 West Fifty-first street; S. Greenwald, a tenement at 336 and 338 East Fourth street; John J. Hickey, a loft building at 129th street and Park avenue; P. J. Kenny, a business building at Sixth avenue and Thirty-first street; M. L. Rohman, an apartment at 290-294 West Twelfth street; A. Susemihl, a factory at 227 to 229 East Forty-fourth street; John A. Smith, an apartment at Lenox avenue and 115th street; W. J. McDermott, the Jewish Theological Seminary on East 123d street; Wm. Bryan, an apartment on Ninety-fourth street near Riverside Drive, and T. A. Hill, an apartment at 161 to 163 Madison avenue.

### Heating and Plumbing Notes.

S. A. PHILLIPS of Amherst, Mass., has been awarded the contract for plumbing the Childs Hotel at Wilmington, Vt.

THE officials of the city of Cleveland, Ohio, and the County Government are considering the advisability of the joint ownership and operation of a central plant for heating the city and county buildings.

B. MACKENSIE, Greensboro, N. C., has the contract for heating the new Elwood Hotel with 60 steam Radiators and also the Commercial National Bank at High Point.

L. A. MCGUIGAN, Davis, W. Va., bid \$2240 and secured the plumbing and steam heating contract for the Cottrill Opera House at Thomas, W. Va. A Model Boiler will be used.

J. A. BAILEY of Kaukauna, Wis., has been awarded the contract for a modern heating and ventilating system in the High School at Kiel, Wis., at his bid of \$2900.

THE BUCKINGHAM-ROTH COMPANY of New Haven, Conn., have been awarded the contract for the plumbing in the fine new residence which is being erected in that city for Miss Cora B. Wetmore.

W. P. KIRK, Bridgeport, Conn., is installing the plumbing and heating systems in the new parish house of St. John's Church in that city.

WILLIAMS & MARVIN, Deep River, Conn., make a specialty of the manufacture of Closet Pulls of all kinds. They issue an illustrated catalogue of 14 pages, referring to some of the varieties of these goods which they are manufacturing in various styles and finishes. Special attention is called to their patented Closet Pull, in which the ring is kept in place by a screw connected with a rod which runs through the center of the Pull, the latter

being provided with a rubber fender so inserted in the body of the Pull that it cannot possibly come off. These Pulls are made in two sections. The firm are also manufacturers of Plumbers' Chains and Eight Hooks made in hard brass by automatic machinery, and which are, therefore, absolutely uniform.

THE contract for steam fitting the new G. A. R. Hall at Middleboro, Mass., has been awarded to M. W. Baxter of that place.

THE UNION ENGINEERING COMPANY, 95 to 97 Liberty street, New York, are installing a 2750 foot Henderson Thermo Steam Boiler in the School Building of the Children's Aid Society, East Broadway, New York.

E. BRADLEY LORING has just installed a new heating apparatus in the Savings Bank Building at Hingham, Mass., a Kelsey Generator being used for the purpose.

CARTER, EVANS & Co., Bangor, Maine, have secured the contract for plumbing three new apartment houses for Dr. Atwell Sweet in that city.

THOMPSON BROTHERS of Philadelphia, Pa., have contracts in hand for the installation of a low pressure steam heating apparatus, to cost \$750, at 1837 South street, and one to cost \$956 at Alder and South streets; also a similar system in the Gyncecan Hospital, Philadelphia, to cost \$960.

EIGHT plumbing firms of Toledo, Ohio, have joined in a petition to the Mayor, protesting against the signing of an ordinance making a change in the method of opening paved streets for water and sewer tapping.

THE BUCKEYE STEAM FITTING COMPANY of Cleveland, Ohio, have the contract for installing a hot water heating system in the new residence of Z. D. Patterson in that city.

D. M. & A. D. BURNS of Green Bay, Wis., have been granted a patent on a new Heating Boiler, which is said to utilize the maximum of heat in the coal.

A CONTRACT for the steam heating of two fire companies' houses at West Hoboken, N. J., have been awarded by the Town Council to E. C. Thourot & Co., at their bid of \$799.

THE SCHLUCKEBIER HARDWARE COMPANY, Petaluma, Cal., have been awarded the contract for plumbing the elegant mansion which is being erected at that place for D. J. Healey.

L. E. ANDREWS & Co. of Gloucester, Mass., will furnish the heating apparatus for the new M. A. Pickett Association Building at Marblehead, Mass.

JAMES T. McNAB, 95 Prospect street, Paterson, N. J., will install Henderson Thermo Steam Boilers in the new buildings of the Lauter Piano Company, the Postal Telegraph Company, and Samuel Sykes, druggist.

WILLIAM P. FERGUSON of Knoxville, Tenn., has been appointed a plumber for the United States Army and assigned to service with the Sixteenth Infantry at Fort McPherson, near Atlanta, Ga. Mr. Ferguson served with the Tennessee Volunteers in the Spanish-American War and spent some years in Cuba and the Philippines.

THE contract for heating the new Norman County Court House at Ada, Minn., has been let to the Pond & Hazy Company of Minneapolis.

E. J. ERBELDING was awarded the contract for the installation of a new steam heating system in the City Hospital of Augusta, Ga., at his bid of \$1653.

J. HOWARD EWALD, 83 Laclede Building, St. Louis, Mo., has been appointed sole agent for Southern Illinois, Missouri and Texas for the Scaife and We-Fu-Go water softening and purifying systems manufactured by Wm. B. Scaife & Sons Company, Pittsburgh, Pa. Mr. Ewald has been for years identified with the iron and steel industries in this section. He has made a special study of the subject of water purification.

THE REMPE COMPANY, Chicago, in a substantially bound catalogue call the attention of the trade who used Wrought Iron Pipe and Iron Pipe Coils to the fact that the Wrought Pipe they manufacture is made from refined skelp especially designed for bending, and when bent by special machines preserves the full circle of the Pipe. All welding is done by the electrical process. The catalogue not only illustrates the various purposes for



which Wrought Iron Pipe is designed, but presents fittings of an improved design and some of the most modern tools now in service in handling Wrought Pipe.

THE BIGNALL & KEELER MFG. COMPANY of Edwardsville, Ill., have issued a catalogue describing their line of Pipe Threading and Cut Off Machines. Their Peerless No. 3 Improved is especially designed for severe and exact service in the cutting of pipe from  $\frac{1}{4}$  to 3 inches and bolts from  $\frac{1}{2}$  to 2 inches. The bed is long, giving the carriage a travel of 27 inches, and the chucks and die head are of ample proportion. Their No. 18 machine is intended to thread and cut off standard merchant pipe from 8 to 18 inches. Eight sets of dies are included in the regular equipment, a separate set being furnished for each size of pipe, each set consisting of 12 chasers.

G. E. MONTAGUE of Springfield, Mass., will erect a plant for the building of Windmills for all purposes. A gasoline engine will be installed.

J. B. CARROLL, 36 La Salle street, Chicago, Ill., is issuing a four-page circular devoted to the Hahn Acetylene Burner. This Burner is said to give especially excellent service, owing to its construction, a feature of which is the relative size of the air inlets and the small gas orifice, so constructed as to insure perfect combustion of the gas and the complete absence of any carbon formation on the burner tip.

THE commissioners for the erection of a new City Hall at Newark, N. J., will receive bids until September 24 for a heating and ventilating system for the new building.

THE Board of Health of Wallingford, Conn., have informed Plumbing Inspector C. J. Leroux that he has the authority to enforce the compliance by factories with the rules of the Board of Health, and he has been instructed to see that they are lived up to.

THOMAS RYAN, acting secretary of the Department of the Interior, at Washington, D. C., will receive bids until October 1 for a central heating plant for the Government Hospital for the Insane at Washington, D. C.

THE Board of Works of Newark, N. J., has decided to erect Sanitary Closets in Washington, Military and Lincoln parks. The structures will be of iron and located near the center of each park, a short distance from the principal pathway. They will be surrounded by shrubbery, so that they will be entirely hidden.

GRAY & SUTER of Sedalia, Mo., bid \$1600 and secured the contract for installing a steam heating apparatus in the Howard Payne Building in that city.

THE Board of Health of Lorain, Ohio, have denied the petition of the plumbers of that city to charge a \$25 license fee, the object being to prevent the Lorain plumbers from having to compete with plumbers from out of town.

THE Master Plumbers' Association of Taunton, Mass., has denied the request of the journeymen plumbers for an eight-hour day, owing to the fact that none of the other trades in the city have an eight-hour day.

A MOVEMENT is on foot in Birmingham, Ala., to have a revision of the local building and plumbing laws so as to bring them more into conformity with the rapid growth of the city.

THE B. F. SHAW COMPANY of Wilmington, Del., have received the contract for a heating plant for a large building for the Pennsylvania Steel Company, at Steelton, Pa.

THE SUNLIGHT LAVA MFG. COMPANY, Chattanooga, Tenn., are issuing a very neat pamphlet of 12 pages devoted to the variety of Acetylene Burners which they manufacture and recommend. These Burners vary in lighting capacity from  $\frac{1}{4}$  to 1 foot per hour, though a larger Burner and Group Lights can be furnished if desired.

J. A. PAINCHAUD, Montreal, Canada, is sending to those interested in lighting by acetylene a six-page folder devoted to his Gasoline Apparatus, which is said to be "fool proof, fire proof and reliable in operation." The circular enumerates the various considerations that should receive attention by the purchasers of such apparatus.

A NEW sanatorium at Attleboro, Mass., invites bids for the heating and plumbing.

McGLYNN & Co. bid \$1487 and secured the contract for a steam heating plant for the new Quigley bakery at Taunton, Mass.

FRANK G. DU BOIS, who is well known to the Plumbing Supply trade, is sending to his friends blotters calling attention to his removal, and giving the location of his new office at 150 Nassau street, New York, with telephone No. "2558, John," where he can be either found or called up to audit accounts or do expert accounting work. Mr. Du Bois has had 30 years' experience in general business, manufacturing, trade, &c., and is well qualified to render assistance to those who need help in their accounting department.

THE Ansonia apartment building in New York City, according to a recent description by A. L. Rice in the *Engineer*, will have its own power plant for furnishing 18,000 lights, supplying steam to 2500 radiators, hot and cold water to 1000 faucets through 160,785 feet of Pipe, cold brine to 400 Refrigerators and ice water to each of the 340 suites of apartments.

THE new Tube mill of the Wheeling Steel & Iron Company, at Benwood, W. Va., has been started up. This plant is equipped to make Tubes up to 8 inches in diameter. The skelp for the Tube mill will be rolled by the company in their own skelp mills.

THE Asbestos Mfg. & Supply Company, St. Louis, have rented a factory to be added to their works. The company make Steam Pipe and Boiler Coverings.

THE output of Pipe at the National Works of the National Tube Company, at McKeesport, Pa., in August was the largest in any one month in the history of that plant and amounted to over 1000 tons a day for 26 days.

C. L. BASTIAN MFG. COMPANY, 76-82 Illinois street, Chicago, Ill., have issued their Catalogue B of Siamese Hose Valves, Hydrant Gates, Automatic Couplings, Hose Pipes, Nozzles, &c. The company are also brass founders and finishers, and make a specialty of Castings of every description in aluminum, German silver, phosphor bronze, red and yellow brass.

THE TRENTON POTTERIES COMPANY of Trenton, N. J., have just issued a reproduction of the illustrations of their Ideal Solid Porcelain Ware which will be shown in their D catalogue and which will be issued in the immediate future and which will contain, so far as practical, illustrations of a complete line of Sanitary Goods of all descriptions made by the Trenton Potteries Company. They have largely increased their facilities for manufacturing Solid Porcelain Goods and now have two plants making this line of goods exclusively. With the fact that their Ideal brand of goods is known throughout the trade, and with the increased facilities they have for handling all orders intrusted to them, it is expected that their business in this line will be materially increased very soon.

THE eighth and September edition of the Directory of Recognized Master Plumbers, issued by President E. D. Hornbrook from the headquarters of the National Association of Master Plumbers in Kansas City, Mo., contains 200 pages, an increase of 14 pages over the last issue. It shows the prosperity of the national body under the present president, who is to be congratulated.

QUARTERMASTER H. J. SLOCUM, Chattanooga, Tenn., will receive bids until October 8 for heating, plumbing and gas piping for 65 frame building, constituting the new military post at Chickamauga Park.

J. H. MOSELAZE bid \$4373 and secured the contract for tiling and plumbing the Cordova Hotel at Memphis, Tenn.

GEORGE J. TOBIN of Plainfield, N. J., has secured the contract for plumbing in the new wing to be built on the State Capitol at Trenton. The contract price for this work is \$15,000. Mr. Tobin also secured the plumbing work at the State Reformatory at Rahway.

SPRIGGS BROS., Grand Forks, N. D., have received the second carload of House Heating Boilers required for contracts they have for customers in different towns in the State. They report business with them as very good.



**New Firms and Changes.**

J. C. ESLOW has opened a plumbing and heating business at Albion, Mich.

THE LOCKE REGULATOR COMPANY, Kittery, Maine, have been incorporated with a capital of \$250,000 for the purpose of making and selling Steam and Water Pressure Regulators. The officers are: President, Charles C. Smith; treasurer, Brainerd E. Smith of Kittery, Maine.

H. P. BLACKWOOD has opened a plumbing shop at Ogden avenue and Fifth street, West Superior, Wis.

THE RICHMOND PLUMBING COMPANY of Richmond, Va., whose incorporation was reported in our last issue, have begun business at 26 North Ninth street, Richmond. The officers are as follows: President, J. G. Davidson; vice-president, W. T. Yarbrough; secretary and treasurer, H. T. Burley. These, with T. K. Sands and J. Temple, constitute the Board of Directors. H. M. Delaney, one of the best known and most experienced plumbers of the city, will have charge of the company's plumbing branch. The concern are prepared to bid on all plumbing and tinning, gas fitting, sheet metal, electric wiring and other work of like nature. The paid in capital stock of the company is \$10,000. They are in possession of a handsome store and showroom, where they make a fine display of Mantels, Chandeliers, Gas Stoves, Ranges, Bathroom Fittings and other goods.

**New Publication.**

**The National Tube Company's Book of Standards and Useful Information.**—Pocket form. Gilt edge. Leather bound with flap. Pages, 322. Price, \$1.

This volume, which has just been issued by the National Tube Company, Pittsburgh, Pa., is a valuable contribution to engineering literature. It is not simply a catalogue of the products manufactured by the National Tube Company, although considerable space is given to this subject. It contains a great deal of related engineering matter which has been specially edited for this book by Prof. Reid T. Stewart. The object aimed at by this book has been to group together all the dimensions and data pertaining to standards as manufactured by the National Tube Company, for the purpose of making the publication a practical and valuable aid to all users of pipes, tubes, &c. The use of tubular goods has become so extensive that a great variety of articles necessary for different purposes has to be manufactured and a large amount of data has accumulated on the subject.

The book is divided into ten departments. These departments are indicated by the following sub-titles, each occupying a full page: Tables of Standard Dimensions of Tubular Goods as Manufactured by the National Tube Company, Dimensions of National Trolley Poles and Deflections Under Stated Loads, Seamless Tubular Goods, Useful Information Relating Chiefly to Tubular Construction, Steam and Steam Apparatus, Air, Gas, Iron and Steel, Weights and Measures, Mensuration, Trigonometry and Mathematical Tables. At the end of nearly every department a view is given of some one of the company's works, which are located at McKeesport, Pittsburgh, Middletown, Philadelphia, Chester, Oil City, Ellwood City, Christy Park and Versailles, in Pennsylvania, Wheeling in West Virginia, Youngstown and Warren in Ohio, Syracuse and Cohoes in New York and New Castle in Delaware.

The tables of standard dimensions are very comprehensive, giving the sizes, thickness, circumference, transverse areas, weight per foot, threads per inch, heating surface, standard dimensions of couplings, weight of fittings, possible upsets for tubes and all other information which is desired in connection with these products. The dimensions of National trolley poles and deflections under stated loads are given in a series of tables which are conveniently arranged for ready reference. The details relative to seamless tubular goods comprise tables showing the weight per foot in pounds of various diameters, together with illustrations of hydraulic forgings, such as carbonic acid gas cylinders, boiler shells, projectiles, &c. The information relating to tubular construction covers a series of articles relative to boiler incrustation and corrosion, water pressure, flow of water in pipes, frictional heads at given rates of discharge, discharging capacities of full smooth pipes, the contents of

pipes and cylinders of various diameters, weight of water in foot lengths of pipe and data relative to water power, pumps and pumping engines, &c. The department relative to steam and steam apparatus gives tables showing properties of saturated steam and factors of its evaporation, formulæ covering the flow of steam in pipes, resistance to flow by bends, valves, &c.; chapters on nonconducting coverings for steam pipes, power of engines and boilers, sizes of chimneys for steam boilers, &c.

The department on air gives tables for adiabatic compression or expansion of air, volumes of mean pressures per stroke, temperature, &c., in the operation of air compression and a great deal of useful information on volume and pressure curves of air, efficiency of air compressors at different altitudes, flow of air through pipes, &c. The department devoted to gas gives a formula for the flow of gas through pipes, tables covering the maximum supply of gas through pipes, services for burners, weights of gas holders, &c.

The department relating to iron and steel covers a short treatise on the method of manufacturing iron and steel and gives standard specifications for special open hearth plate and rivet steel, tables of strength of materials, a chapter on mechanics of materials relating to tubular construction, formulæ covering deflection and strength of pipes to resist bending action, chapters on stress due to internal bursting pressure, strength of thin cylinders to resist bursting, strength of cylinder ends or heads, and a large number of tables giving breaking loads in tons of hollow, cylindrical and wrought iron pillars, shearing and bearing value of rivets in pounds per 100, weight of bolts, sizes and weights of sheets and plates of various metals, United States or Sellers system of screw threads, strength of wrought iron pillars, &c.

The department treating of weights and measures covers the ordinary tables of weights and measures, as well as the metric system and mechanical, electrical and heat equivalents. The department covering mensuration, trigonometry and mathematical tables is quite comprehensive, filling 45 pages. A very complete index is found at the back of the book, requiring 15 pages.

**Alcohol Motors in Germany.**

The alcohol or "spirit" motor industry has been developing very rapidly in Germany. The chief advantages of these motors as compared with steam engines are that they are always ready for work without a preliminary warming up; they can be filled up, oiled and started in from two to three minutes, there is no constant supplying of coal and water, no danger of fire or explosion, no consents required from Government authorities and no compulsory inspection. Their working is independent of the state of the weather, the "spirit" is easily obtainable in all districts, there is no smoke or smell, and the weight of portable "spirit" motors is about half the weight of portable steam engines of equal power. The "spirit" for motors, containing 90 per cent. of pure alcohol, can be purchased at from 20 pfennige to 22 pfennige per liter (about 3 cents per pint), delivered at any station in Germany. The motors exhibited at an agricultural fair at Halle last year were from 1 to 25 horse-power. As regards cost, the Dürr Motor Company were exhibiting portable spirit motors of 6 to 8 horse-power at \$1000, 10 to 12 horse-power motors at \$1300 and 16 to 20 horse-power at \$1625. Of the tests made one trial gave a consumption of 0.92 pound of 86 per cent. spirit and 0.81 pound of a mixture of one-fifth benzol and four-fifths 86 per cent. spirit, in both cases per B. H. P. per hour.

It is reported that the output at the Bellaire Steel Works, Bellaire, Ohio, last week was the largest in the history of the mill. In one turn of 12 hours the men made 54 heats of 540 tons of steel. This is the record for a single turn and makes over 1000 tons in the full turn. This work was done with machinery that a year ago was claimed could not make more than 500 tons in two turns. The prediction that the mill could make 1000 tons of steel in 24 hours was derided.



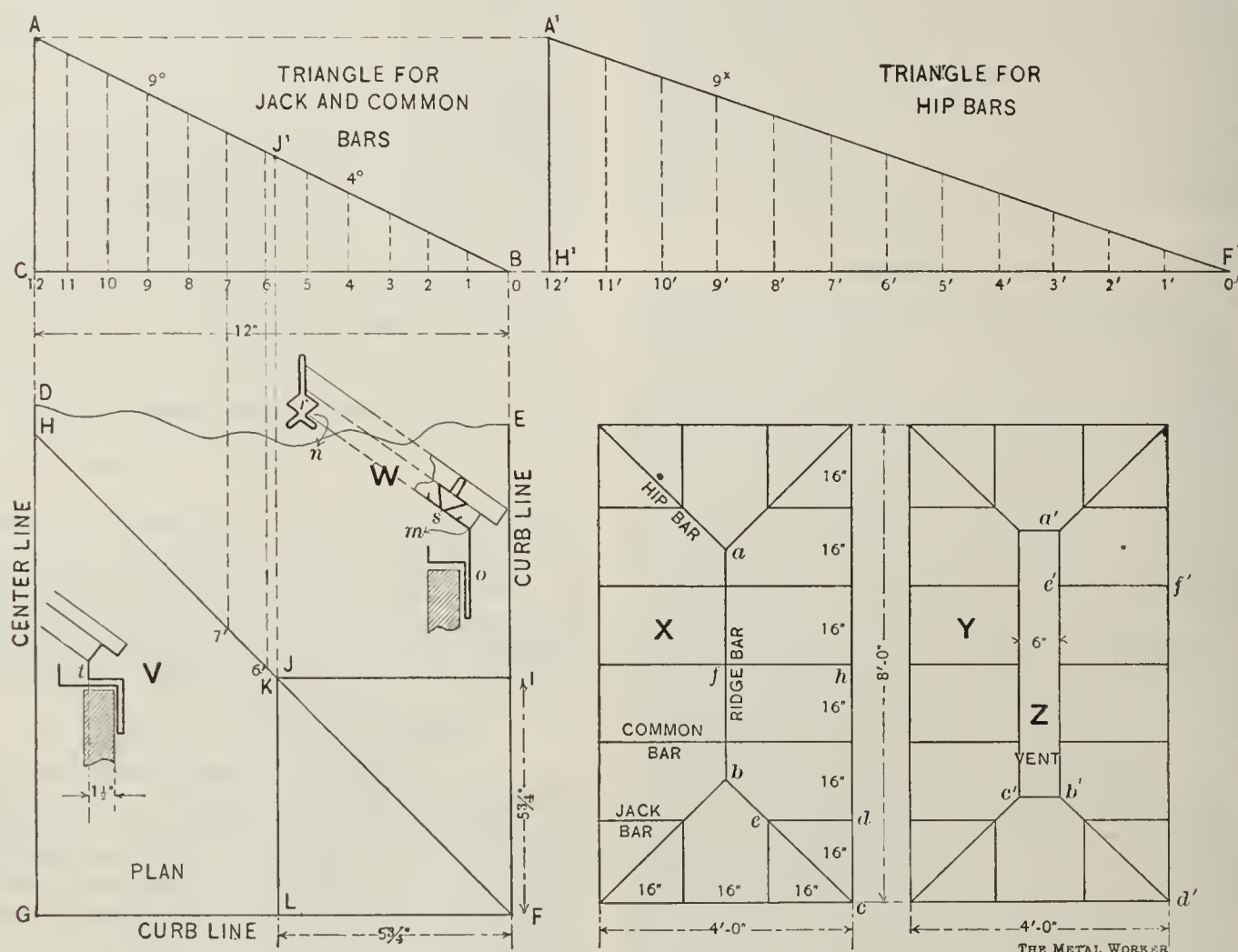
## FINDING THE LENGTHS OF SKYLIGHT BARS.

A New York City correspondent asks *The Metal Worker* to describe the best method for laying out skylight bars. In reply to this question it may be said that there are various methods in use for obtaining the lengths of the hip, jack, common and ridge bars in hipped skylight work. One of the simplest and quickest methods is here shown. By using this method any length of bar can be obtained from a drawing about 12 x 18 inches in size. It is only necessary to bear in mind that the size of the curb, or frame, forms the basis for all measurements, and that one of the lines or bends of the bar should meet the line of the curb, as shown in diagram W of the accompanying illustration, where the bottom of the bar meets the curb *o* at *m*, and the ridge bar *r* at *n*. Therefore, when laying out the lengths of

hip bar. Now take the distance *H F* and set it on the horizontal line *H' F'*, which also divide into 12 equal parts, as shown from 0' to 12'. At right angles to *H' F'* draw *H' A'*, equal in height to *C A*, as shown, and draw the hypotenuse *A' F'*. From the various points 0' to 12' erect lines at right angles to *H' F'*, intersecting *A' F'*, as shown. In practice each of the spaces on *H' F'* should also be divided into eight equal parts representing  $\frac{1}{8}$  inch.

In the plan, *I J* and *J L* represent the center lines of two jack bars spaced  $5\frac{1}{4}$  inches from *F* on the curb line. A perpendicular line carried up from the point *J* until it intersects the hypotenuse at *J'* would give the length of the jack bar, as shown from *J'* to *B*.

Now, to explain how these triangles are used in practice, the diagrams *X* and *Y*, showing respectively a skylight without and with a ventilator whose curb measures



Finding the Length of Skylight Bars.

the bars, they would have to be measured on the line *s*, from *m* to *n*.

First draw any line, as *B C*, 12 inches in length. From *C*, at right angles to *B C*, erect the line *C A*, in length so that a line drawn from *A* to *B* will be the pitch equal to that used in obtaining the pattern. Or, if a new set of patterns is desired, make *A B* one-third pitch. Then will *A B C* represent a half section through a skylight, say, 2 feet wide, and *A B* will be the length of the common bar. Now divide the distance *B C* into 12 equal parts, which represent inches, and from these intersections, at right angles to *B C*, erect lines intersecting the hypotenuse *A B*, as shown. In practice the 1-inch spaces are divided into eight spaces, the same as on a 2-foot rule. Then will *A B C* represent a triangle for obtaining the true lengths of jack and common bars for any size of skylight.

It will now be necessary to construct a triangle from which the length of the hip bar is obtained, and for which proceed as follows: Directly below *B C* draw part of a half plan view, as shown by *D E F G*, and from *F* draw the diagonal line at an angle of 45 degrees, as shown by *F H*, meeting the center line at *H*. Then will *H F* represent the plan of the center line of the

4 x 8 feet, has been prepared. Three rules are used in connection with these triangles, the comprehension of which will make clear all that will follow.

**RULE 1.** To obtain the length of the ridge bar in a skylight without a ventilator deduct the short side of the curb from the long side.

*Example:* In diagram *X* take,  
8 feet (long side of curb) — 4 feet (short side of curb)  
= 4 feet (length of ridge bar, *a b*).

**RULE 2.** To find the length of the ventilator in a skylight deduct the short side of the curb from the long side and add the width of the desired ventilator.

*Example:* In diagram *Y* take  
8 feet (long side of ventilator) — 4 feet (short side of ventilator) = 4 feet.  
4 feet + 6 inches (width of ventilator) = 4 feet 6 inches (length of ventilator, *a' b'*).

**RULE 3.** To find the lengths of either common or hip bars deduct the width of the ventilator, if any, from the length of the shortest side of the frame or curb and divide the remainder by two. Apply the length thus obtained on its respective triangle for common or hip bars and determine the true lengths of the desired bars.

*Example:* As no ventilator is shown in diagram *X*



there will be nothing to deduct for it, and the operation is as follows:

4 feet (shortest side of frame or curb)  $\div 2 = 2$  feet.

We now have the length with which to proceed to the triangle for common and hip bars. Thus the length of the common bar  $f h$  will be equal to twice the amount of  $A B$ , while the length of the hip bar  $b c$  will be equal to twice the amount of  $A^1 F^1$ . Referring to diagram X, the jack bars  $e d$  are spaced 16 inches, therefore the length of the jack bar for 12 inches will be equal to  $A B$ , and for 4 inches equal to  $4^{\circ} B$ , both of which are added together for the full length. The length of the jack bars in diagram Y will be similar, but the common and hip bars are shorter because a ventilator is used. Now, following Rule 3,

48 inches (length of short side) — 6 inches (width of ventilator) = 42 inches.

42 inches  $\div 2$  inches = 21 inches = 1 foot 9 inches.

Then, in skylight Y, the length of the common bar  $e' f'$  will be equal to  $A B$  and  $9^{\circ} B$  added together and the length of the hip bar  $b' d'$  equal to  $A^1 F^1$  and  $9^{\circ} F^1$ . Use the same method where fractional parts of an inch occur. If the curb is bent, as shown in diagram V, bringing the bottom line of the bar  $t$   $1\frac{1}{2}$  inches toward the inside of the frame all around, then instead of using the size of  $4 \times 8$  feet as the basis of measurement deduct 3 inches on each side, making the basis of measurement 3 feet 9 inches by 7 feet 9 inches, and proceed as explained above, which will make all the bars a little shorter.

### The Position of the United States Steel Corporation.

The American Iron and Steel Association have compiled from the returns at their disposal a full statement of the production of the United States Steel Corporation in 1901, as compared with the total production of the country, with a view of combating the statement frequently made that the steel corporation monopolized the production of the iron ore, pig iron and finished iron and steel in this country. With the exception of iron ore, the statistics presented have been carefully compiled from the returns of production made to the American Iron and Steel Association by the constituent companies of the United States Steel Corporation and by all other iron and steel manufacturing companies. The iron ore statistics in 1901 were obtained from the corporation itself and from other authentic data collected by the association, and all the figures given are said to be complete and absolutely correct, nothing having been estimated. The statement shows that of the total production of iron ore in 1901, 28,887,479 tons, the United States Steel Corporation produced 12,692,213 tons and the independent companies 16,195,266 tons, giving the steel corporation 43.9 per cent. of the total output. Of the total amount of pig iron produced in 1901, 15,878,354 tons, 6,803,988 tons were made by the steel corporation, against 9,074,366 tons by independent companies, a percentage for the steel corporation of 42.9. In a total of 13,369,611 tons of Bessemer and open hearth steel, 8,860,584 tons were produced by the steel corporation, against 4,509,027 tons by the other companies, a percentage of 66.3 for the steel corporation. All other finished iron and steel products, including steel rails, structural shapes, plates and sheets, wire rods, bars, skelp, cut nails, &c., the United States Steel Corporation produced 6,189,958 tons, against 6,159,369 tons produced by the other companies, or 50.1 per cent.; while of wire nails 6,446,938 kegs of 100 pounds each are credited to the United States Steel Corporation, against 3,356,884 kegs for the independent companies, a percentage of 65.8 for the steel corporation.

THE Bar mill at the plant of the Muskingum Valley Sheet Steel Company, Zanesville, Ohio, has been shut down. The closing of the mill is said to be due to the fact that the company can obtain all the Bars needed for their Sheet mill from other mills at a cheaper price than they could manufacture them. The company are reported to have a number of orders ahead, and their plant is in steady operation.

### Welsh Tin Plate Makers and Metal Ceilings.

The prospects of the Welsh tin plate trade are the subject of much discussion on the other side. Says the London *Ironmonger*: "Though the adverse vote of the Welsh tin plate workmen in the United States has for the moment frustrated the attempt of the American Tin Plate Company to capture the rebate trade, Welsh manufacturers cannot shut their eyes to the fact that the time will come when America will supply the whole of the tin plates required by its consumers. It, therefore, behooves the Welsh manufacturers to look to other sources of consumption." To this end the *Ironmonger* suggests that they take into serious consideration the desirability of putting on the market "steel embossed sheets for ceilings and wainscoting," which can be produced more cheaply than tin plates. In other words, the Welsh tin plate makers are urged to embark in the production of steel ceilings and sidewalls. South Africa, it is suggested, will presently require a large amount of material of this kind in the houses being erected or to be built in the future there.

American metal ceiling manufacturers should take this hint. Steel ceilings and side walls are especially adapted to the needs of South Africa, and it should be possible to open up a big market for this class of goods in that country. A suggestion has also been thrown out that the Welsh Tin Plate and Sheet Makers' Association should erect a model dwelling in Swansea to show the advantage of steel embossed sheets for interior decoration and also of terne plates for roofing. This is another hint that might be worth the attention of American manufacturers. Why should not such an object lesson of American productions in the line indicated be feasible and profitable in South Africa or other promising markets? In no better way could the merits and advantages of metal ceilings and side walls be brought to the attention of foreign consumers.

### The German Sheet Syndicate.

There are some features connected with the German sheet syndicate which are interesting. The 45 members have a minimum participation of 368,000 metric tons based on sheets of 1 mm. (0.039 inch) thickness. Heavier sheets are figured at a lower rate, while lighter sheets are counted at a larger rate. Thus a product of 100 pounds of 1.15 mm. sheets (0.059 inch) are counted as 80 pounds, while 100 pounds of 0.5 mm. (0.0197 inch) sheets are counted as 180 pounds and 100 pounds of 0.375 mm. (0.0148 inch) sheets at 260 pounds. The basis is a capacity of 4 metric tons per 12-hour shift. The different districts participate in the following proportion: Rhenish Westphalia, 185,000 tons; Sieg and Lenne, 115,000 tons; South German, 42,000 tons, and Upper Silesia, 26,000 tons. The largest individual mills are Dillinger Huettenwerke, 32,000 tons; Wolf, Netter & Jacobi, 25,000 tons; Stahlwerk Hoesch, 22,000 tons, and Grillo, Funke & Co., 21,000 tons. The outside mills, some of which co-operate with the syndicate, represent a tonnage of about 40,000 tons. The sales and the distribution of specifications are managed by the firm Verband Deutscher Feinbleck-Walzwerke, at Cologne.

### PRESIDENT SHAFFER'S POSITION.

It would appear that serious differences exist at the present time between President Theodore J. Shaffer and the rank and file of the Amalgamated Association of Iron, Steel and Tin Plate Workers. It is well known that Mr. Shaffer has been a persistent advocate of the acceptance of the offer for a reduction of wages on work on tin plates for the export trade made by the American Tin Plate Company. Mr. Shaffer has used all his influence to persuade the tin workers to accept this offer, but the result has not been according to his advice. He is now in the position of a leader of a revolted following, a majority of the members of the Amalgamated Association having voted against the proposition which he supported. It is said that Mr. Shaffer's action in the present instance is practically sure to prevent his reelection as president of the Amalgamated Association.



According to a recent newspaper interview President Shaffer is credited with the statement that he would force the tin plate workers to accept the American Tin Plate Company's proposition. Whether he has the power to do this remains to be seen. But, meanwhile, there is no question that a very sharp difference of opinion exists in the association, which may possibly lead to a split in the future.

### SOME LESSONS ON LEAKS.

BY OLD ROSINHEAD.

Leaks are of various characters and of a greater or less degree. Webster's definition of a leak is "a hole or crack that permits a fluid to pass." This is not definite enough for all practical purposes, for we know that elements other than fluids leak. The greatest leak that we have to contend with is the leak in our pocketbook. We have the hardest time imaginable trying to compress something into it, but before the week is half gone it has entirely leaked out.

The most singular leak we ever had to deal with occurred several years ago. One Saturday night we bought a bottle of vegetable water, highly colored (not mineral), and placed the flask in our inside coat pocket. As it happened, we got the bottle upside down, and, lo and behold! when we wished to take an eye opener next morning all we found was an empty bottle and a dry cork. We might have borrowed a clothes wringer, but we did not know of any one in the neighborhood who was possessed of such an article. So we went and stood the merchant off for a drink—of vegetable fluid. The leak in the pocket at this time was the more marked of the two.

We heard a story of a wonderful leak narrated as having occurred during the Civil War. The Commissary Department at a fortified post town received four barrels of whisky. As there was no room to store it in the freight house on its arrival the barrels were up-ended on the depot platform and a guard placed over them for the night. Next morning two or three of the barrels were empty. During the night the soldiers had bored a hole up through the platform and into the barrels, carrying the contents off to camp in kettles, pots, &c.

Ten or 12 years ago we had occasion to put in four or five days' work repairing leaks on a large wholesale liquor house, and we personally know that several large leaks occurred in several well filled whisky barrels on the top floor. Every cask on that floor had the bung out, and bottles turned neck down into the holes. But these were naturally very different leaks from those previously mentioned. The first were gravity leaks and the last were from capillary attraction, up through a straw.

Before the days of cash registers some clerks used to have the habit of helping themselves from the money drawer. These losses were said to be occasioned by a leak in the money till. We do not know if cash registers have any leaks or not, as none of my bosses has ever run me up against a cash register. But I expect that they can be tinkered with as well as any other old machine.

Twenty-two years ago I was clerk and tinner in a large stove store in Iowa. The boss's wife was there all the time, and she and I could not "haw nor gee." She fired me several times, but I paid no attention to that; so she laid her plans to get her husband to do the firing act. She misplaced the money out of the till several times, with the expectation that her husband would discover the loss and lay it to me. But the old man was too suspicious of her and was too foxy for the old lady. He was watching her, and not me, with the result that he soon found where the money had gone. After that the old woman made it too hot for me. It is better to be in h—l than to war with an ireful female; so at the end of the month I threw up my job in disgust and went on a tramp with a meandering umbrella man.

When a bank cashier helps himself to a bank's money there is said to be a leak in the bank funds. Wish we were a bank cashier; wouldn't we create a leak? Gee, wbiz! We would knock the bottom of the bank vault out in short order.

But it is the leaks as tinnors know them that we desire to discuss more than any other kind; not the leaks that permit matter to flow out, but those that permit undesirable elements to flow in—leaks in the roof. We have studied this subject closely and have decided that such leaks can be divided into four distinct classes. When endeavoring to locate a leak, if one class is not discernible, look for some one of the others. It is a dead sure thing that you must find a leak before you can stop it.

The first on the list we will call the "gravity leak." This is occasioned by a hole, or crack, through which the water flows by its own weight. The next one we will style the "splash leak." This is where ventilators or other openings set down near a flat roof and rain falling heavily breaks into spray and leaks sometimes 2 feet upward into any opening that may be near. This occurs sometimes when a counterflashing has opened out from its proper place, and also under the lower part of some skylights that have openings at the bottom of the glass. This is a cause for leaks which is often overlooked by tinnors.

The next kind of leaks we will name the "drift." These, as the name implies, are occasioned by the rain drifting, by force of the wind, in through openings and cracks that would not otherwise admit the rain. Wall ventilators and roof ventilators with too small caps permit these leaks to occur.

The last on the list are leaks that are caused by capillary attraction, and therefore can be called "capillary leaks." Broken seams in hip valleys are of this kind. Old rusty V-crimped and corrugated iron roofs leak from this cause. Lapped glass in greenhouse work often leaks from this cause also. Dormer windows and eyebrow ventilators, both in tin and slate, and built in on the slope of the main roof, are frequent sources of great trouble because when they were built proper care was not taken to overcome the force of the capillary attraction.

Several years ago we were greatly troubled by what was supposed to be a leak in the skylight built over an open court of a five-story office building. We went to a window that opened into the court during a rain storm and we found that the water was coming down and covering an electric light wire that was introduced through the opening under the lower end of the glass, and was carried across the court to the opposite wall. At the place at which it passed under the edge of the glass it made a slight turn upward over the bead of the water gutter. But this did not prevent the carrying of the water. The water followed the wire half way across the court, up a kink in the wire, where it fell in drops to the stone floor below. We tied a string around the wire where it passed over the top of the gutter and the water dripped off the string into the gutter. This was a leak that was very easily stopped—after we had put in about one day's time on the skylight and accomplished nothing.

About 25 years ago we read an article in the daily papers of a man going around the country selling a patent potato bug exterminator. The package was not to be opened until ready for use, but it was said to be sure death to any bug and only cost 10 cents a package. When the farmer opened his package he found two little square pine blocks with a printed slip between with the legend, "Catch the bug; put him on one of the blocks and hit him with the other." If you are called upon to repair a leaky roof find the leak and then repair it in any old way so that you stop the leaks. And ten chances to one the owner will swear that you made more leaks than you stopped.

ED. S. BURGESS, president of the Burgess Soldering Furnace Company, Columbus, Ohio, has been compelled to shorten his annual summer recreation period, usually spent at Columbus Beach, Indian River, Mich., by several weeks, owing to the excessive demand for the company's productions, especially the Gem Soldering Furnaces. His many friends in the trade may appreciate the fact that a curtailment of the annual fish story will necessarily follow the shortening of a pleasurable vacation.



## FLASHINGS.

It is reported that the Shenango plant of the American Tin Plate Company, at New Castle, Pa., will be enlarged by the removal of the company's Ellwood City plant to New Castle, and its addition to the Shenango works.

LAST month there was held in the City of Mexico a meeting of the shareholders of Mexico's principal operating Tin mine, which bears the rather far fetched name of the Australia & Queensland Tin Mines Company. Favorable reports were made in regard to operations and prospects. It was agreed to increase the capital of the company by issuing 150 shares of stock at \$100 each, for the purpose of purchasing additional machinery. The shares were immediately subscribed for by those present at the meeting. It is asserted that large bodies of Tin Ore have been uncovered in the company's property and that the prospect for its profitable treatment is very favorable. The president of the company is L. La Barra.

THE JUNIATA STEEL & IRON COMPANY, Greencastle, Ind., expect to have their new Tin Plate plant in operation by November 1. It will be a six-mill plant equipped in the most modern style.

A CHARTER has been issued to the Canonsburg Steel & Iron Company, Canonsburg, Pa., with a capital of \$250,000. The directors are John F. Budke, William H. Baxton, George W. Retburg, George B. McNutt and Ralph Marvin of Canonsburg, John M. Watson of New Castle, H. A. Quail of North Starbans, John G. Paxton of Chartiers and R. S. Park of Peters.

THE AMERICAN CAN COMPANY have decided to dismantle their Tin Can factory at Astoria, Ore., and remove the machinery and equipment to the large new factory they are building at Portland, Ore. The Portland factory will probably be in operation by February 1.

THE Star works of the American Tin Plate Company, Pittsburgh, Pa., are reported to be running full. The company's Beaver works, at Lisbon, Ohio, have been shut down. It is the last of their union plants to cease operations.

IN our last issue it was stated that F. B. Reeves would sever his connection with the Philadelphia branch of the Wheeling Corrugating Company. Mr. Reeves advises us that his initials are S. V., and not F. B., as therein given. We gladly make this correction.

SIXTEEN mills at the Laughlin Tin Plate plant at Martin's Ferry, Ohio, have been put at work. Eight mills are still idle on account of a new engine being installed.

THE Sheet mills at the plant of Zug & Co., Limited, Pittsburgh, Pa., are running full in all departments, with a prospect of continuing during the winter.

THE new Bar mills at the plant of the Parkersburg Iron & Steel Company, Parkersburg, W. Va., have been put in full operation and are working very satisfactorily. The concern are operating six Sheet mills, but on three of them Black Plate for tinning can be rolled if necessary.

DURING the next week the wage scale governing Bar Iron, Sheet and Tin Plate mills will be arranged for September and October. It is expected that the average price of Iron Bars shipped out by the mills in July and August will give puddlers an advance in wages. In July and August puddlers were paid \$6 a ton, based on a 1.6 card. In case it is found that the price of shipments for Iron Bars in July and August is 1.70 cents, it will entitle puddlers to an advance of 12½ cents for puddling and finishers 2 per cent. There will no doubt be no change made in the Sheet and Tin Plate scales, as prices on both of these commodities have not advanced for some time, but on Sheets are slightly lower.

It is reported that Eastern capitalists have secured options on lands owned by the Estate of John D. Aukron at Sistersville, W. Va., with a view to locating Steel and Iron Mills, Tin Plate Works, &c.

THE Tin house departments of the Shenango and New Castle works of the American Tin Plate Company,

at New Castle, Pa., are still in operation, but as soon as all the Black Plate is worked up they will be shut down for an indefinite period.

THE SHEET STEEL COMPANY of Pittsburgh have been organized and will apply for a charter of incorporation. The new company have leased the plant of the Tuscora Steel Company at Newcomerstown, Ohio, which contains four hot mills and four cold mills, galvanizing and proofing department. George A. McLean has been elected president and treasurer of the Sheet Steel Company and the offices will be in the Lewis Block, Pittsburgh.

THE AMERICAN SHEET STEEL COMPANY have recently installed at their Aetna-Standard Works, Bridgeport, Ohio, a jobbing mill, which with other jobbing mills added during the last year makes seven jobbing mills at this plant. The American Sheet Steel Company are now installing at the Aetna-Standard Works a three-high jobbing mill of the latest type, which will be in operation in November.

THE YOUNGSTOWN IRON SHEET & TUBE COMPANY of Youngstown, Ohio, have commenced active work on the building of their new Open Hearth Steel plant. The output of this plant will be used by the concern in the manufacture of Sheets and Pipe, as it is the intention of the Youngstown Iron Sheet & Tube Company to manufacture both Iron and Steel Pipe for the market. The company have been making Wrought Iron Pipe for some time and are turning out about 300 tons a day.

ONE steel building, 50 x 150 feet, formerly occupied by the Ellwood Works of the American Tin Plate Company at Ellwood City, Pa., is being removed to New Castle, Pa., and will be erected near the Shenango Works. It will be used for an annealing box and stand factory.

WE are officially advised that the report that the W. Dewees Wood Works of the American Sheet Steel Company, at McKeesport, Pa., would be very much enlarged and three new Sheet mills added is untrue. Beyond the usual ordinary repairs no changes are to be made at these works.

IWAN BROTHERS, Streator, Ill., are calling special attention to their Iwan's Revolving Chimney Top, the merits of which are well known to our readers. These Chimney Tops are claimed to produce a strong and regular draft at all times and have scored a considerable success since they were placed on the market. The firm also manufacture Conductor Pipe Hangers.

## Some Rules for Casting Aluminum.

The following rules for casting aluminum are given by the Foundry:

Pour this metal as cold as possible. Of course, thin castings have to be poured hotter than those of heavier section, but on general principles this rule holds good in all cases. A convenient way of ascertaining the temperature of the metal is as follows: If its color is red, stir with a pig of aluminum until it is white. The melting of the pig will serve as a guide so far. Then dip the end of a cold pig ¾ inch or so into the metal, when the aluminum will chill around the pig, and when the latter is withdrawn from the melted metal it remains like a little cup on the surface of the metal. The time required for this chilled metal to melt gives a good idea of the temperature of the metal in the crucible.

Use sand as dry as possible, and avoid sponging a mold. A little filing on the casting where the mold tears up is more to be preferred than a lost casting. Small bodies of sand nearly surrounded by metal, such as the center cores of small set collars, are almost certain to blow if the sand is a little damp.

Use large sprues and heavy gates. In some cases, however, it will not do to put a large gate on a thin casting, as the gate sometimes draws from the casting.

Pour rapidly. Just "dump" the metal in. Aluminum is not as liable to wash away portions of the mold as other metals, on account of its lightness.

Ram the molds very softly. It is not necessary to ram these nearly as hard as for iron, as aluminum is but one-third as heavy. Soft ramming will very often prevent the breakage of castings when they "set." The reason for this is that aluminum, just after it solidifies, is very weak and crumbly, and will scarcely bear its own weight. Vent all molds well.



## THE LETTER BOX.

*Inquiries in regard to practical questions of general interest are invited, in reply to which we shall be glad to receive suggestions and information from our readers.*

*Correspondents are requested in all cases to give their names and addresses, which will not, however, be published or disclosed without their consent.*

### NAME WANTED.

If the correspondent at Linesville, Pa., who asks a question about the boiling of water, will send us his name, in accordance with the request printed at the head of this department, his communication will receive prompt attention.

The number of unsigned communications we are constantly receiving impels us to reiterate the statement that we must refrain from answering inquiries unless accompanied by the correspondent's name and address.

### HEATING FROM RANGE BOILER.

From E. B. S., Gettysburg, S. D.—I should like help on the proposition to connect a water back in a range by means of 1-inch pipes, with a hot water storage tank about 4 feet distant. This tank is close to the wall of the bedroom, which is 14 x 18 feet in size with a 9-foot ceiling. Now what I desire to know is, can I heat this room by substituting tees for the ells and carry the piping to a bedroom radiator? What size should the pipe be to supply the radiator and how much surface should the radiator contain to heat the room sufficiently? Also, would it be practical to expect so much from the kitchen fire?

**Note.**—The first question to be decided is whether or not the fire chamber of the stove is large enough to do the baking, the cooking on the top of the stove, heat the water for domestic purposes and still have reserve power for heating the water for warming the bed chamber? If the fire chamber is large enough then the question will be whether or not the water back exposes surface enough for heating so much water. The size of the family and the way the kitchen stove is run will also bear vitally on this question. If the family is small and the fire is run very moderately, it is improbable that water will be heated sufficiently for the purpose. These questions can all be best answered by our correspondent.

In the absence of more detailed information the only method of arriving at the size of radiator that will be needed in the bed chamber is to allow 1 square foot of heating surface for every 30 cubic feet of space, and a little calculation will show that 75 feet of surface will be needed for the room. In consequence, it would be better to use a radiator or a miter coil connected with manifold headers, than to use a return bend coil. One-inch pipes are as small as should be used in connection with the apparatus under construction, and they will be none too large for the work. The pipe for heating the radiator should be carried along the ceiling, from the tee which our correspondent proposes to insert, to the radiator where it should drop down and connect with it. The return pipe may be carried around the floor of the room through the wall and rise to the cold water pipe connecting with the water back. Some provision must be made for the escape of the air in the pipe along the ceiling, and if the high point is made in the kitchen, a pet cock can be placed in it to allow the air to escape when it accumulates to such an extent as to interfere with the circulation. The book, "Kitchen Boiler Connections," which can be furnished by our Book Department, has two chapters treating on this subject.

### CAPACITY OF VESSELS.

From M. J. M., Palestine, Texas.—I should be much obliged if you could give me a simple way of determining the capacity of any vessel.

**Answer.**—The Metal Worker Shop Card No. 5, which can be furnished by our Book Department, gives the capacity of cylinders from 4 to 72 inches in diameter and from 1 to 72 inches

in depth. To find the capacity of a flaring vessel add together the squares of the two diameters and the product of the two diameters, and multiply the sum by one-third the perpendicular height and .07854. If the dimensions of the vessels are taken in inches, the result will be the capacity in inches, which, divided by 231, will give the capacity of a vessel in gallons. From this rule our correspondent will also be able to calculate the size of vessels to hold a given number of gallons.

### HOW CHIMNEYS ARE CLEANED.

From O. W. T., Macon, Ga.—My business consists of furnishing stove repairs and repairing stoves and I now wish to add the cleaning of chimneys. The fuel used here is soft coal in grates and our buildings are two and three stories high. Can you give me any information as to how chimneys are cleaned and what appliances are used? These chimneys are usually very small, and as I have never seen an expert chimney sweep work, I am desirous of securing information.

**Note.**—The tools required for the work can be purchased from any brush manufacturer, who will make them to order when the sizes required are known. Where the chimneys are small the brushes are made somewhat like a wheel, the wooden part in the center being round, and the bristles or steel wires of which they are composed radiate from the center. If the chimneys are oblong some advantage attends the use of oblong or oval shaped brushes. These brushes should have either a hole through the center or an eye bolt securely attached to each side for fastening a rope. In use a rope is dropped from the top of the chimney and the brush fastened to it by the operator at the bottom. After this is done, if the grate from which the chimney leads is located in a parlor or handsomely furnished room, the chimney sweep should cover the opening with a clean canvas to prevent the soot, which may fall as the brush is drawn up through the chimney, from blowing out into the apartment. Should the brush become stuck by any obstruction, the rope that is fastened to the inside will allow the operator in the room to aid the operator on the roof in dislodging it. Experience enables the chimney sweep to do this work without causing any dirt or making it necessary to remove any of the fine furnishings from the room in which the grate is located. The advantage in the use of ropes and brushes of the construction suggested is that they can be drawn through chimneys with off sets where sectional rods attached to the same brushes could not be passed round the turns and bends in the chimney.

### A NOISY SERVICE PIPE.

From L., Sandwich, Ill.—Your valued journal comes to our store regularly, and we would like to ask a question in the Letter Box about the noise in a plumbing system. The system in question is located about 200 feet from the water main and is supplied through a ¾-inch pipe. This ¾-inch pipe also supplies a water tank located about half way between the main and the plumbing system. This tank supplies water free and is left with an overflow running all the time. When the water is turned on so that the tank will fill and keep running over there is a noise all the time at the plumbing system and we have been unable to stop it. Just as soon as the water is shut off from the tank the noise ceases. Is there any way of stopping the noise and still allowing the water to flow continuously?

**Note.**—It is the opinion of previous contributors to the Letter Box that noise under such conditions is always due to some loose part, either at the watering tank or in some fixture on the plumbing system in the building. The flow of water causes a very slight vibration, due to the slight variation in the pressure caused by the flow. This vibration, however, is sufficient to keep the loose part in motion, and it has been found that the noise so started is inclined to increase and become very loud on a long run of pipe. The remedy is to locate the loose part and tighten it up, or to substitute cocks or faucets constructed without any loose parts that are likely to become loosened and subject to the vibration, causing noise.



### HAMMERING IN RANGE BOILER.

From J. D., Newport, N. H.—Can *The Metal Worker* give me any explanation of the hammering in a range boiler under the following conditions? As soon as the hot water faucet is opened the noise begins, but it ceases if the water runs a few minutes. There is a water pressure on the boiler of 100 pounds per square inch. I had the full pressure on the boiler, with a four-pipe brass coil in the range. I changed that and put in a two-pipe coil, and also connected a pressure reducing valve to the supply pipe, so that the boiler is now operated under about 40 pounds pressure; but the noise still continues. I have looked for obstructions and low places in the pipes leading to and from the range, but have found none. I have consulted your book, "Kitchen Boiler Connections," and found similar cases and applied the remedies suggested, but have not discovered the real cause of the trouble yet.

Note.—We shall be glad if our readers will give their views on this subject. In the meantime we would suggest that possibly the brass coil still has too large a heating capacity for the boiler with which it is connected and for the amount of water used by the family having the range in use. This would cause the overheating of the water, and as soon as the pressure in the boiler is reduced by the opening of the hot water faucet steam is generated to condense and cause the noise. In many instances, however, a loose part in some fixture which vibrates under a modification of the pressure, such as would occur when the hot water faucet is open, will cause a noise, which may be at some point quite distant from the seat of the cause. Examination of the delivery tube should be made, to see that it is not closed at the bottom through sediment, or by being bent, and also that it has as large a capacity as the hot water service pipe, so that the cold water can flow into it as fast as the hot water can be forced out, by means of steam or any other cause, through the hot water service pipe. We make these suggestions, but would be glad if our practical readers, who are every day brought into contact with such problems, and who have a better opportunity of learning the cause and the remedy, will lend their assistance to this correspondent.

### TINNING CAST IRON.

From E. P., Washington, D. C.—Please let me know if the following statement in regard to tinning cast iron is correct; and if wrong, point out where and how. I have never had any experience in tinning cast iron and would like to find some good simple way. The statement is as follows: "To tin cast iron the castings must first be cleaned in a solution of hydrochloric acid, 1 part, and water, 20 parts. Then immerse in muriatic acid, sal ammoniac and water from three to four hours, and then take out. They must be washed in clean water immediately to prevent oxidization. Next dip in muriatic acid, 1 part; water, 40 parts, for two or three seconds, then in muriate of zinc and sal ammoniac; then dip in melted tin, which should be covered with a flux of muriatic acid and sal ammoniac, after which dip in kerosene oil and wash in hot water."

Answer.—While there is no essential fault to find with the above method for tinning cast iron articles, we offer another, which is, possibly, a little more definite. To be successful in coating with tin the castings must be absolutely clean and free from sand and oxide. They are usually freed from imbedded sand in a rattler or tumbling box, which also tends to close the surface grain and give the articles a smooth metallic face. The articles are then placed in a hot pickle of 1 part of hydrochloric acid to 4 parts of water, in which they are allowed to remain from one to two hours, or until the recesses are free from scale and sand. Spots may be removed by a scraper or wire brush. The castings are then washed in hot water and kept in clean hot water until ready to dip. For a flux dip in a mixture composed of 4 parts of a saturated solution of sal ammoniac in water and 1 part of hydrochloric acid, hot. Then dry the castings and dip them in the tin pot. The tin should be hot enough to quickly bring the castings to its own temperature when perfectly fluid, but not hot enough to quickly oxidize the surface of the tin. A sprinkling of

pulverized sal ammoniac may be made on the surface of the tin or a little tallow or palm oil may be used to clear the surface and make the tinned work come out clear. Some operators again dip in a pot of hot palm oil or tallow at a temperature above that of the melted tin, for the purpose of draining the excess of tin and imparting a smooth, bright surface to the castings. As soon as the tin on the castings has chilled or set they should be washed in hot sal soda water and dried in sawdust.

### HOW CAN HOT WATER BE SUPPLIED?

From E. A. S., Renton, Wash.—Will *The Metal Worker* kindly advise us how to connect a heater coil and a tank to supply hot water for a hotel? A hotel range that is now in use is to be provided with a coil made of 1½-inch iron pipe measuring 10 inches one way and 15 inches the other, and having four turns. As there is no city water supply, it will be necessary to furnish an open tank, which will have to be filled by means of a force pump from the well. I suppose that the tank will have to be placed outside of the kitchen to allow the steam to escape. I shall be glad to learn the different means of connecting the coil and the tank to afford a good circulation.

### PATTERN FOR OVAL FOOT TUB.

From H. C. S., Baltimore, Md.—Will you please publish in *The Metal Worker* the method of drawing the pattern for an oval foot tub?

Answer.—Problem 132, "The Envelope of the Frustum of a Cone, the Base of which is an Elliptical Figure," in "The New Metal Worker Pattern Book," shows how to develop the pattern for the sides of the tub. The pattern for the bottom is the same as the plan view of the bottom of the pan.

### REPAIRS WANTED FOR NEW ENGLAND RANGE.

From F. M. B., Philadelphia.—Answering the inquiry of "W. L. S.," in *The Metal Worker* of September 6, we beg to advise you that upon looking over our records we find that there is a concern called the New England Stove Company of Taunton, Mass. Probably this is the concern who manufacture the range for which "W. L. S." desires to get repairs. We hope this information will be of benefit to him.

### A Floating Sample Room.

The Commercial Oriental Expedition Company will start the steamship "Oregon" from Seattle, Wash., on November 15 on a six months' tour, loaded with samples of American products and having as passengers the representatives of the manufacturers and dealers. The markets of Eastern Asia, South Africa, Australia and Pacific islands will be visited. The purpose of the company was brought to the attention of the Seattle Chamber of Commerce and received the hearty indorsement of that body. The promoters of the enterprise believe that to open up new markets it is absolutely essential that extensive displays of samples as well as personal solicitation be made, and it is to this end that they will place the "Oregon" at the disposal of enterprising American merchants who are expected to convert her into a gigantic floating exhibition and sample room. The American consuls at the several points to be visited will be advised fully as to the objects of the expedition, the date of arrival and departure from each port and other data necessary to a proper co-operation.

The lower deck of the "Oregon" will be electrically lighted and fitted with every convenience for exhibition purposes. The deck will be used for no other purpose throughout the voyage and will be open to the public at all reasonable times. The vessel will have on board launches for carrying passengers and interested townspeople between ship and shore at places where wharfage facilities may be inadequate. Power will be furnished to firms requiring it for the proper exhibition of refrigerator plants, electric lighting or ventilating appliances. Two thousand dollars will be charged each exhibitor for the entire voyage, and for this amount there will be supplied in addition to transportation floor space on the exhibition deck to the extent of 2000 pounds.



# TRADE REPORT.

## MARKET SUMMARY.

**Pig Tin** has been dull, and is about  $\frac{1}{4}$ c. lower in price.

**Copper** is quiet and unchanged.

**Pig Lead** continues firm, with a moderate volume of business.

**Spelter** is still strong, with a continued scarcity of spot metal.

**Antimony** is quiet and unchanged.

**Nickel** is in good demand at unchanged prices.

**Aluminum** continues in active demand at former prices.

**Tin Plates** are dull as to large business, but more active in a retail way; prices unchanged.

**Sheets** are in rather better demand, with prices somewhat irregular.

**Scrap Iron** is very strong and somewhat higher.

**Scrap Brass and Copper** have stiffened.

**Foundry Iron** continues scarce, with prices nominal.

**Sheet Copper** is unchanged and in fair demand.

**Sheet Zinc** is moderately active and prices very firm.

**Hardware** shows increased activity, with prices well maintained.

**Steam Gauges** have been materially advanced in price by manufacturers.

**Roofing Papers** are firm and active.

**Sad Irons** have been advanced in price.

**Wire Nails** are more active and are firm in price.

**Cut Nails** are in moderate demand at former price.

**Cordage** is weak and low.

**White Lead** is more active and prices firm.

**Linseed Oil** has been reduced 3c. a gallon.

**Spirits Turpentine** is moderately active and unchanged

**Spelter.**—This metal is quiet. Spot is still scarce and very firmly held. Jobbers quote good Western brands in small lots at  $6\frac{1}{2}$ c. to  $6\frac{3}{4}$ c. per lb. St. Louis advises report that the demand for Spelter shows a considerable decrease there and that prices have eased somewhat in consequence.

**Sheet Zinc.**—The demand for Sheet Zinc is of the usual proportions. Prices are firm and unchanged at  $6\frac{3}{4}$ c. per lb. for 600-lb cask lots, and  $7\frac{1}{4}$ c. to  $7\frac{1}{2}$ c. for smaller quantities.

**Antimony.**—No change is noted in this metal. Cookson's in small lots is selling at 10c. to  $10\frac{1}{4}$ c. per lb., Hallett's at  $8\frac{3}{8}$ c. to  $8\frac{3}{4}$ c. and U. S. at  $8\frac{1}{4}$ c. to  $8\frac{1}{2}$ c.

**Nickel.**—Is unchanged. Small lots rule at about 55c. to 60c. per lb.

**Aluminum.**—The demand for Aluminum is referred to as good and prices are without change. Small lots of No. 1 Ingot, guaranteed 99 per cent. pure, are quoted at 37c. per lb. and 100-lb. lots at 35c.

**Tin Plates.**—The market for Tin Plates has been dull and uninteresting as regards large business. There has been an almost entire absence of any important buying, and prices are without change. The American Tin Plate Company quote for delivery up to December 1 on the basis price ruling for the past year. Jobbers report more activity in the retail trade, there being quite a brisk demand in this vicinity from the smaller consumers, the demand covering all classes of Plates. Retail prices are practically unchanged, although there is said to have been some cutting on the part of certain holders who desired to secure business. This price cutting, however, is regarded as unjustifiable, as stocks of Plates are not excessive, and the closing down of so many mills will prevent any unwieldy surplus in the near future. Jobbers, as a rule, continue to quote American Bessemer Coke Plates, IC, 14 x 20, at \$4.70 to \$4.90 per box in moderate sized lots, delivered at New York and corresponding points. An advance of  $1\frac{1}{2}$  pence is reported in the price of Welsh Plates, the quotation being now 12 shillings 6 pence, Swansea.

**Sheets.**—The demand for Sheets is said to have improved somewhat, and manufacturers are beginning to expect a larger business during the fall and winter months. A number of mills are idle, which is cutting down the output of Sheets considerably. This ought to have a beneficial effect on the market, which has been somewhat soft of late. Competition in this trade has become very apparent, and some of the independent mills are understood to have been naming considerably lower prices than those maintained by the principal Sheet interest, who have not changed their quotations. In a retail way, business has picked up to some extent during the week, although the demand for Light Sheets and Galvanized Sheets is reported to be still rather tame. Jobbers quote No. 27 One Pass Cold Rolled Soft Steel Sheets in small lots at 3.60c. to 3.65c., and No. 27 Galvanized Sheets at 4.45c. to 4.60c.

Chicago advices are as follows: The week has brought forth little if any improvement in the market for either Galvanized or Light Black Sheets. The offerings are liberal and the demand only moderate. For Heavy Sheets there is a fair inquiry and the market is steady. No. 27 Black Sheets in small lots from store are offered at 3.25c. to 3.35c., Chicago, and Galvanized Sheets at 4.30c. to 4.40c. for No. 27.

**Old Metals.**—The demand for Scrap Iron is active, and supplies are not excessive; consequently prices have advanced. Scrap Brass and Copper are rather stiffer. Dealers are paying about the following rates for moderate sized lots delivered at New York or corresponding points:

|                              |                             |
|------------------------------|-----------------------------|
| Heavy Copper.....            | per lb. 10 $\frac{1}{2}$ c. |
| Light and Tinned Copper..... | per lb. 9 $\frac{1}{2}$ c.  |
| Heavy Brass.....             | per lb. 8 $\frac{1}{2}$ c.  |
| Light Brass.....             | per lb. 6 $\frac{1}{2}$ c.  |
| Lead.....                    | per lb. 3 $\frac{3}{4}$ c.  |
| Tea Lead.....                | per lb. 3 c.                |

## METAL MARKET.

NEW YORK, September 12, 1902.

**Pig Tin.**—Business throughout the week in the Tin market has been very quiet. Consumers are backward in buying, transactions being on a hand to mouth basis. In view of the fact that the large consumers are still well supplied through old contracts, and that a considerable proportion of the Tin Plate mills are idle, the lack of demand is natural. Prices have been easing off under this condition and also on account of heavy arrivals. With an occasional upward spurt the market has settled to a still lower level than a week ago. Jobbers' prices are about  $\frac{1}{4}$ c. less than those quoted in our last report, Straits Pig in small lots being quoted at 28c. to  $28\frac{1}{2}$ c. per lb. The London market is also easier. Arrivals thus far this month have amounted to 1730 tons and it is estimated that 2984 tons are afloat.

**Copper.**—After the dullness of the last few weeks a short lived "boom" set in at the end of last week, caused by the appearance of some favorable statistics of the Copper supply. The boom did not survive any time, however, and prices again settled down to about the level held for some time past. Meanwhile a considerable amount of Copper changed hands and some purchasers found that they had acquired more metal than they could well take care of, consequently were obliged to throw it again on the market at some loss. Lake Ingot in small lots is quoted at about  $12\frac{1}{2}$ c. to  $12\frac{3}{4}$ c. per lb. and Casting Copper at  $12\frac{1}{4}$ c. to  $12\frac{3}{8}$ c.

**Sheet Copper.**—There is no change in this department. The demand for Sheet Copper is of fair proportions and prices are unchanged on the basis of 18c. per lb. for Sheet Copper from store.

**Pig Lead.**—The market is quiet and firm, with a fair volume of trade. American Pig in small lots is quoted at 4.45c. to  $4\frac{1}{2}$ c. per lb. St. Louis advices indicate that the demand for Pig Lead in that market is on a very moderate scale, with prices unchanged.



|                                        |         |                  |
|----------------------------------------|---------|------------------|
| Zinc .....                             | per lb. | 2½c.             |
| Pure Aluminum Sheet.....               | per lb. | 22 c.            |
| Cast Aluminum.....                     | per lb. | 17 c.            |
| No. 1 Pewter.....                      | per lb. | 18 c.            |
| No. 2 Pewter.....                      | per lb. | 9 c.             |
| Tin Plate, per gross ton.....          |         | to \$5.00        |
| Wrought Iron Scrap, per gross ton..... |         | \$15.00 to 16.00 |
| Heavy Cast Scrap, per gross ton.....   |         | 14.00 to 14.50   |
| Stove Plate Scrap, per gross ton.....  |         | ..... to .....   |
| Burnt Iron, per gross ton.....         |         | 8.50 to 9.00     |

### The Scully Stocks of Sheets.

The Scully Steel & Iron Company, Halsted and Fulton streets, Chicago, have one of the largest warehouses in the country, specially arranged to carry stocks of Sheets, Plates and other forms of manufactured Iron and Steel. It is located with direct track connections with leading railroad lines, thus enabling shipments to be made with dispatch and at minimum cost for handling. Some idea of the heavy stock carried by this company is conveyed by the full-page advertisement to be found in another part of this issue. This advertisement relates exclusively to Sheets, enumerating the quantity on hand of every size of Black Sheets of No. 14 gauge and lighter and of every size of Galvanized Sheets of No. 16 gauge and lighter. The list is worth studying by all users of Sheets.

### THE PIG IRON MARKET.

NEW YORK.—There are reports of further heavy purchases of foreign Pig Iron by importers, but we are unable to verify them. Consumers are buying moderate quantities of foreign Iron from importers right along. The most interesting development during the week has been the purchase by Rogers, Brown & Co., Pig Iron merchants of this city, of the Foundry Pig Iron product of the Dominion Iron & Steel Company of Sydney, C. B., for a period of six months. It is estimated that the tonnage amounts to about 7000 tons per month. There is practically no domestic Foundry Pig Iron available for prompt or early delivery, and the Southern railroads have advanced the rail and water freight to New York to \$4.25. For delivery in 1903 the following quotations are made: Northern Iron, at tidewater, No. 1 X, \$23.25 to \$24.75; No. 2 X, \$22 to \$22.75; No. 2 Plain, \$21 to \$21.75. Tennessee and Alabama brands, in New York and vicinity: No. 1 Foundry, \$23.25 to \$23.50; No. 2 Foundry, \$22.25 to \$22.50; No. 3 Foundry, \$21.50 to \$22.

CHICAGO.—The abnormal conditions prevailing have resulted in a chaotic market, with prices irregular, covering a wide range even on the same grade and brand of Iron. It is difficult, if not entirely impossible, to secure appreciable quantities of Iron for the first six months of 1903 of either Northern or Southern brands. Most of the business doing seems to be skirmishing for spot Iron, or its equivalent, shipments during the next 30 days. A few car lots of Southern No. 1 Foundry have been sold at \$27.65 to \$28.15, and No. 2 Foundry has been selling within 50c. of No. 1. Local No. 2 Foundry commands \$27 to \$28 for immediate delivery. The Coke famine is becoming more and more potent, affecting producer and consumer alike. More furnaces in the Central West are banked, and foundries are hampered by the intermittent fuel supply, with the result that both the production of Pig Iron and the melting for Castings vary considerably from day to day. Under the circumstances the prices prevailing, even for the first six months of next year, are of a nominal character.

PHILADELPHIA.—The excited feeling so strongly in evidence some time ago is abating materially. Consumers begin to realize that Iron will be forthcoming, and when prices get to \$23 to \$24 per ton no prolonged shortage will be feared. In short, the outlook denotes that high water mark in prices has been reached. This is indicated by a less urgency to place orders for next year's deliveries, as well as less running around for spot lots. The latter are supplied to a great extent by English and Scotch Irons, shipments of which appear to be so arranged that there is nearly always a cargo in port, or one at hand. American No. 2 X Foundry for this and next month's shipments readily taken at \$23 to 23.50.

Sales have been unusually heavy, small and medium sized lots comprising the bulk of the business, and mostly for foreign Iron. Prices are just about as they were a week ago, No. 2 X Foundry being \$23 to \$23.50 for this year's deliveries, \$22 to \$22.50 for the first quarter of 1903, and 50c. to 75c. less for deliveries covering the whole of 1903. Scotch Iron sells at \$22.50 to \$23.50 on dock, duty paid, and Middlesbro at \$20.50 to \$21. These quotations are for small lots. Car lots could be done at lower figures.

PITTSBURGH.—Unless the Coke situation materially improves within the next two weeks there is no doubt that a very large tonnage of foreign Iron will be brought into the Pittsburgh district. Actual negotiations are now under way for the importation of at least 150,000 tons of foreign Bessemer, which is to be divided among three or four large Steel concerns, who find it utterly impossible to get Pig Iron as fast as needed for their Steel works. The Coke situation, instead of improving, seems to be getting worse, and a number of furnaces that have had to bank quite often recently will blow out unless the supply improves in a short time. Little or no Foundry Iron is for sale, but not much is wanted, as consumers are pretty well covered. Prompt Foundry Iron will bring very close to \$23, Pittsburgh.

CINCINNATI.—The amount of offerings of Iron for delivery in 1902 and 1903 is so small as to hardly justify a quotation. The little that is selling is on the basis of \$21.75 to \$22.50, Birmingham. Northern Irons for this year's delivery are in the main unchanged. The market for this year's delivery is undoubtedly higher than a week ago, and the minimum quotation to-day on No. 2 Southern Iron is on the basis of \$18.50, Birmingham, at which figure quite a limited amount of metal is contractable. We quote f.o.b. Cincinnati for 1902 delivery as follows:

|                                |                    |
|--------------------------------|--------------------|
| Southern Coke, No. 1.....      | \$24.50 to \$26.25 |
| Southern Coke, No. 2.....      | 24.00 to 25.75     |
| Southern Coke, No. 3.....      | 22.75 to 24.50     |
| Southern Coke, No. 4.....      | 22.25 to 22.50     |
| Southern Coke, No. 1 Soft..... | 24.50 to 26.25     |
| Southern Coke, No. 2 Soft..... | 24.00 to 25.75     |
| Ohio Silvery, No. 1.....       | 29.10 to 29.60     |
| Ohio Silvery, No. 2.....       | ..... to .....     |
| Lake Superior Coke, No. 1..... | 26.10 to 26.60     |
| Lake Superior Coke, No. 2..... | 25.60 to 26.10     |
| Lake Superior Coke, No. 3..... | 25.10 to 25.60     |

ST. LOUIS.—The Pig Iron market is very quiet, and while there is some little inquiry the indications point to the demand being satisfied for some time ahead. What business of importance comes up is for the first half of 1903. Eighteen dollars, Birmingham, for No. 2 Foundry seems to be the quotation generally adhered to for delivery the first half of next year. The following is the range of prices current for cash, f.o.b. St. Louis:

|                              |                    |
|------------------------------|--------------------|
| Southern, No. 1 Foundry..... | \$21.50 to \$24.00 |
| Southern, No. 2 Foundry..... | 20.75 to 23.25     |
| Southern, No. 3 Foundry..... | 20.25 to 22.75     |
| Southern, No. 4 Foundry..... | 19.75 to 22.25     |
| No. 1 Soft.....              | 21.25 to 23.75     |
| No. 2 Soft.....              | 20.75 to 23.25     |

### CHICAGO REPORT.

Scrap Iron and Steel.—The market has developed a decidedly stronger tone, supplies being inadequate, and dealers finding a more ready outlet are buying at 50c. per ton advance on all the leading articles. The following are the prices paid by dealers in carload lots, Chicago:

|                                                        | Per net ton.       |
|--------------------------------------------------------|--------------------|
| Country Wrought Scrap.....                             | \$16.00 to \$16.50 |
| Machinery Cast.....                                    | 14.50 to 15.00     |
| Malleable Cast.....                                    | 13.00 to 14.00     |
| Stove Plate (free from burnt).....                     | 11.00 to .....     |
| Burnt Iron and Grate Bars.....                         | 9.50 to 10.00      |
| Sheet Iron and Hoops.....                              | ..... to 10.00     |
| Flow Steel.....                                        | 13.00 to 13.50     |
| Breaking Stock.....                                    | 12.50 to 13.00     |
| Old Boilers—whole (Iron).....                          | 9.50 to 10.00      |
| Old Boilers (Iron) cut in single Sheets and Rings..... | 14.00 to .....     |
| Old Gas Pipe and Boiler Tubes.....                     | 13.50 to 14.00     |
| Cast Borings .....                                     | 9.00 to 9.50       |
| Turnings .....                                         | 12.50 to 13.00     |
| Horseshoes .....                                       | 13.50 to 14.00     |

Old Metals.—Both Copper and Brass have stiffened in sympathy with primary markets and prices are ¼c. to ¾c. higher. Zinc and Lead have continued firm but quiet. Dealers have advanced buying prices of Copper



Wire, Copper Bottoms, Clips, Red and Yellow Brass.  
The following are the prices paid in this market:

|                            | Per lb.   |
|----------------------------|-----------|
| Copper Wire and Heavy..... | 10 3/4 c. |
| Copper Bottoms.....        | 9 1/2 c.  |
| Copper Clips.....          | 10 1/4 c. |
| Red Brass.....             | 10 1/4 c. |
| Yellow Brass.....          | 7 3/4 c.  |
| Red Brass Borings.....     | 9 1/4 c.  |
| Yellow Brass Borings.....  | 7 1/4 c.  |
| Light Brass.....           | 6 3/4 c.  |
| Pipe Lead.....             | 3.70 c.   |
| Tea Lead.....              | 3.35 c.   |
| Zinc.....                  | 3.45 c.   |
| Tin Foil.....              | 21 c.     |
| Pewter, No. 1.....         | 18 c.     |
| Pewter, No. 2.....         | 11 c.     |
| Aluminum.....              | 20 c.     |

**Old Rubber.**—A little firmer feeling has resulted from less free offerings and an improved outlet. Dealers buy at the following prices, Chicago:

|                            | Per net ton. | Per lb.  |
|----------------------------|--------------|----------|
| Garden Hose.....           | \$25.00      | .....    |
| Air Brake Hose.....        | 47.50        | .....    |
| Rubber Shoes.....          | .....        | 7 c.     |
| Rubber Car Springs.....    | .....        | 5 c.     |
| Inside Bicycle Tubing..... | .....        | 22 c.    |
| Outside Tubing.....        | .....        | 5 c.     |
| Black Rubber.....          | .....        | 4 c.     |
| White Rubber.....          | .....        | 8 1/2 c. |

**Rags.**—The receipts have been only moderate and with a fair outlet the market has continued to rule steady, without essential change in prices. Dealers are buying County Mixed Rags at 75c. to 85c. per 100 lbs., Chicago delivery.

**Anthracite Coal.**—It is impossible to give any reliable quotations on Coal of any kind or size. Few dealers have any Coal to offer, but there are reports that sales have been made at prices ranging from \$7 to \$10 per ton on track. There is scarcely a local dealer who has the temerity to hazard an opinion concerning the market, they being apparently as much at sea as are consumers.

## THE HARDWARE TRADE.

There are indications of increased activity in the purchase of Hardware. Orders are coming in to manufacturers in very satisfactory number and volume, especially considering the fact that the jobbing trade covered their requirements liberally some time ago. Both jobbers and retailers are preparing for a business of good volume during the fall. The general conditions of prosperity and the way in which trade kept up during what are usually regarded as the dull months justified this. There continues to be, notwithstanding the opportunity which the summer afforded for the clearing of order books, much difficulty in getting goods of various kinds, the manufacturers being unable to make anything like prompt shipments in several lines. The fall season is, in fact, entered upon with back orders on many of their books and with warehouses practically empty. There still continues to be much correspondence with a view to hurrying up shipments. Some prominent jobbing houses are urging their customers to purchase the goods needed for fall and winter trade at an early date in order to avoid delay and disappointment. The manufacturers are handicapped in the turning out of their products by the difficulty in many cases of obtaining raw material, and in a good many factories strikes and labor disturbances have interfered with the regular operation of the works. The active demand and the profitable business which is doing, for manufacturers are obtaining more adequate margins of profit than has often been the case, have the effect of inducing a good deal of enterprise in the way of increasing manufacturing facilities. This is the case both with factories which are being extended and in the installation of new plants. In this way the producing capacity of the trade is being constantly increased, but up to this time the demand in many lines exceeds the supply. With the prevailing prosperity the trade are buying such goods as they require without questioning as to the stability of prices, but are refraining from placing speculative orders, desiring to be on the safe side when the reaction comes. The slight weakness which characterizes a few lines which have been high or in which new competition has interfered with association control is regarded as a desirable feature and not indicative of any general weakness in the market, which continues to be pervaded by a strong and confident tone.

## NOTES ON PRICES.

**Cast Iron Soil Pipe and Fittings.**—It is reported in the trade that prices on Cast Iron Soil Pipe and Fittings are about to undergo an advance. It is said that the demand, instead of diminishing as the summer drew to a close, has had a directly opposite effect and that the manufacturers are now in a worse condition than before regarding the filling of their orders. A report is current this week that one manufacturer was compelled to pay \$30 per ton for spot Iron, which he absolutely had to have to keep his foundry going. This same manufacturer is reported to have covered himself up to the end of the first quarter of next year for Pig Iron at \$16.50 per ton, and up to the end of the first half of next year at \$18.25 per ton, but regardless of all raw material he has bought, he is still unable to fill his present wants without paying exorbitant prices for the raw material. With these conditions prevailing there is every likelihood of a radical change taking place in a very short time in the price of all goods manufactured from Pig Iron.

**Lead Traps and Bends.**—The Union Lead & Oil Company, with offices at 32 Liberty street, New York, and whose factory is at 81 Front street, Brooklyn, have issued a price-list of Drawn Lead Traps and Bends. The list is in every respect the same as that issued June 3, 1901, by the Lead Trap Manufacturers' Association. It is said that the new concern have been endeavoring to purchase the plants of all the other manufacturers and have devoted considerable time and money to that end, but without success. They now announce that they are "Independent of all pools or combinations to control prices."

**Steam Gauges.**—The manufacturers of Steam and other Gauges, who for some time past have been carrying on a ruinous competition, came to an understanding September 5 by which prices have been advanced so that a legitimate profit can be made by the manufacturers. Before the last era of low prices began the base discount was 60 per cent., which has now been placed at 65 per cent., the extras being determined by the class of buyer and the volume of his business. Prices previous to the change last week had gotten as low as 80 and 10 per cent. in extreme cases. While the present prices show advances in some instances of over 75 per cent. it is claimed by the manufacturers that prices in such cases had been cut to less than manufacturers' cost, especially on 5-inch Gauges.

**Roofing and Building Papers.**—The market for Building and Roofing Papers is in a normal condition so far as prices are concerned, but there is plenty of business and manufacturers are slow in executing orders; consequently there is no special reason for cutting prices. Dealers in close touch with the trade in these lines say the consumption of Tarred Roofings, &c., is increasing all the time, a situation that is not explained by the natural increase due to good business conditions. A large part of this growth is attributed to the supplanting of Tin roofs by the various kinds of Tarred and Asphalt Roofings, both regular and prepared. One reason given for the change is the inferior lasting qualities of Tin Plate made from soft steel as compared with the tough Charcoal Iron Black Plate which years ago was the base of the tinned or terne sheet. The following quotations now represent the market for this class of Papers, viz.: Tarred Single Ply Roofing Felt, \$32 per ton; two ply, 55 cents, and three ply, 77 cents per roll, for less than carloads in New York or the metropolitan district. Slaters' Felt under the same system of prices is 80 cents per roll of 40 to 45 pounds each. Rosin Slized Sheathings are quoted as follows: Light, 40 cents; Medium, 50 cents, and Heavy, 60 cents per roll of 500 square feet, in less than carloads. Deafening Felt, 9, 6 and 4 1/2 square feet per pound, is now quoted \$42 per ton, without regard to quantity.

**Sad Irons.**—For some time past the Sad Iron market has been gradually stiffening, owing to the increasing cost of the raw material and the large demand made upon the manufacturers. A further slight advance has



recently been made in this line, the tone of which continues steady and strong.

**Wire Nails.**—Jobbers have received an increased number of orders during the week, and more disposition is shown on the part of some of the trade to place contracts for future deliveries. A fair business is being done in small lots from store. Jobbers' assortments are somewhat broken, owing to delays in transportation. Small lots of Wire Nails from store, New York, are quoted at \$2.25 to \$2.30 per keg.

**Cut Nails.**—The demand for Cut Nails in the New York market is modest. Small lots from store are quoted at \$2.30 per keg.

**Cordage.**—Owing to the weakness of the Rope market, to which reference was made last week, some low prices have been quoted on Sisal Rope, as a result of which a large amount of business was booked and the market has stiffened up, but without an advance upon previous published quotations. Quotations for 7-16 inch and larger are about 10 cents for Sisal and 13 cents for Manila Rope.

**White Lead.**—The demand for White Lead in Oil for prompt delivery, also for forward shipments, shows an increase, and the consumption for the fall months promises to be larger than ever. Under the circumstances the market is firm. White Lead in Oil from store in moderate size lots is quoted at 6½ to 6¾ cents per pound.

**Linseed Oil.**—Reports of frost had a temporary stiffening effect upon the Oil market early in the week, but a large seed crop and the anxiety of holders of Oil to sell resulted in a reduction of 3 cents a gallon in the price of City Raw by manufacturers. Jobbers now quote City Raw in small lots at 58 to 58½ cents per gallon. There is a fair movement of Oil in small lots, but as still lower prices are anticipated only immediate requirements are being covered.

**Spirits Turpentine.**—The local Turpentine market is moderately active, purchases being confined to comparatively small lots. The tone of the Southern market is somewhat weaker, but the holders here are firm in their views. Turpentine in small quantities is quoted at 48 to 48½ cents per gallon.

TRADE NOTES.

THE CROWN POINT GRAPHITE COMPANY of Bath, Maine, have been incorporated with an authorized capital stock of \$1,000,000, to mine Graphite. The president of the company is Edward A. Clark of Boston, Mass., and the treasurer Nathaniel E. Rankin of Lawrence, Mass.

THE CHARLES S. McNALLY METAL COMPANY, Trenton, N. J., have been incorporated with an authorized capital of \$200,000 by Charles S. McNally, Samuel Krekstein and Peter Backes to manufacture Metals.

THE ROYAL MFG. COMPANY, 408 Commerce street, Philadelphia, Pa., have issued Catalogue No. 8, covering their Metal and House Furnishing Specialties. Among these are Fryers and Drainers, Frying Baskets, extra deep Hotel Fryers, Hotel Lard or Grease Pans and improved Henis Self Basting Broilers.

A NEW catalogue is issued by the Philip Carey Mfg. Company of Lockland, Ohio, devoted to Carey's Magnesia Flexible Cement Roofing. This is put up in rolls, the body of which is a strong woolen felt, on top of which is a soft, flexible body of asphalt cement composition, tempered to any range of heat and cold. This is protected by a strong burlap firmly imbedded into the upper surface. The top dressing consists of a heavy elastic paint finish. The catalogue shows the method of applying this roofing material, and also the cement used for making tight laps and joints and for repairing. Interspersed with the text are engravings of a number of buildings on which this roofing material has been used.

E. BISSELL & Co., wholesale auctioneers, 12 Murray street and 15 Park place, New York, announce an important trade sale of Enameled Ware on September 17, 18 and 19 at their warerooms. The sale is by order of Lalance & Grosjean Mfg. Company and National Enameling & Stamping Company, and will comprise over 12,-

000 cases of goods from the factories of these concerns. The goods will be sold by the case in quantities to suit the jobbing and retail trade.

JOSEPH HUSE & SON, 91 Blackstone street, Boston, Mass., are offering to the trade an attractive case of Mica, containing 2 pounds of the material in eight different sizes, viz.: 2 x 3, 3 x 5½, 1½ x 3, 3 x 6½, 4 x 5½, 2 x 5, 4½ x 4½, and 5 x 5 inches. This Mica is guaranteed strictly first-class goods.

Talk about "sending coal to Newcastle!" Here are two cargoes of Welsh anthracite coal, aggregating 8000 tons, on their way across the Atlantic bound for New York, to be used, so it is said, by the Manhattan Elevated Railway locomotives. Furthermore, the news comes from Philadelphia that the local Board of Education, having failed to get bids from the Pennsylvania coal companies for the furnishing of about 25,000 tons of anthracite for the public schools, have completed arrangements to import their supplies of hard coal from England at a cost of only \$1 a ton above the average rate heretofore paid for Pennsylvania anthracite. Who would have believed a year ago that we should be now bringing in that essentially American fuel—anthracite coal—from abroad? Such are the straits to which the miners' strike has reduced the Eastern hard coal consumers.

| CONTENTS.                                                  |       |
|------------------------------------------------------------|-------|
|                                                            | PAGE. |
| Editorial—                                                 |       |
| Pig Iron Production.....                                   | 39    |
| A Fee for Bids.....                                        | 39    |
| Higher Cost of Building.....                               | 39    |
| The South African Market.....                              | 40    |
| The Anthracite Miners' Strike.....                         | 40    |
| Good for the Stove Buyer.....                              | 41    |
| Nominations for Stove Captain.....                         | 41    |
| First Annual Meeting of the American Stove Company.....    | 41    |
| Death of James Duffy. Portrait.....                        | 42    |
| Gas Stove Wrinkles.....                                    | 42    |
| Some Adler Gas Stoves.....                                 | 42    |
| The Tucker Vertical Grinder. Illustrated.....              | 43    |
| The B. C. Bibb Stove Company.....                          | 43    |
| A. J. Magoon & Son Enlarge.....                            | 43    |
| The Charles Smith Company.....                             | 44    |
| Odd Plates.....                                            | 44    |
| The White Mountain Freezer Company.....                    | 45    |
| A New Gasoline Torch. Illustrated.....                     | 45    |
| L. & G. Galvanized Ware. Illustrated.....                  | 46    |
| Stove and Hardware Dealers.....                            | 46    |
| The Plumbers' Supply Association.....                      | 47    |
| The Price of Heating Apparatus.....                        | 47    |
| First Tournament of the Eastern Trade Golf Association.... | 47    |
| Plumbing and Steam Supply League.....                      | 48    |
| Manual for Steam and Hot Water Fitters.....                | 48    |
| A Car Heating System.....                                  | 48    |
| The Second Wonder Acetylene Burner. Illustrated.....       | 48    |
| Wrinkles for the Plumber and Steam Fitter.....             | 49    |
| A New Heating Force.....                                   | 49    |
| Boller Below Range. Illustrated.....                       | 49    |
| Valves, Injectors, Oil and Grease Cups, &c.....            | 49    |
| A New Steam and Water Heater. Illustrated.....             | 50    |
| Washington State Master Plumbers.....                      | 50    |
| A New Plumbing and Steam Supply Catalogue.....             | 50    |
| New York City Notes.....                                   | 51    |
| Heating and Plumbing Notes.....                            | 51    |
| New Firms and Changes.....                                 | 53    |
| New Publication.....                                       | 53    |
| Alcohol Motors in Germany.....                             | 53    |
| Finding the Lengths of Skylight Bars. Illustrated.....     | 54    |
| The Position of the United States Steel Corporation.....   | 55    |
| Welsh Tin Plate Makers and Metal Ceilings.....             | 55    |
| The German Sheet Syndicate.....                            | 55    |
| President Shaffer's Position.....                          | 55    |
| Some Lessons on Leaks.....                                 | 56    |
| Flashings.....                                             | 57    |
| Some Rules for Casting Aluminum.....                       | 57    |
| The Letter Box—                                            |       |
| Name Wanted.....                                           | 58    |
| Heating from Range Boller.....                             | 58    |
| Capacity of Vessels.....                                   | 58    |
| How Chimneys are Cleaned.....                              | 58    |
| A Noisy Service Pipe.....                                  | 58    |
| Hammering in Range Boller.....                             | 59    |
| Tinning Cast Iron.....                                     | 59    |
| How Can Hot Water Be Supplied?.....                        | 59    |
| Pattern for Oval Foot Tub.....                             | 59    |
| Repairs Wanted for New England Range.....                  | 59    |
| A Floating Sample Room.....                                | 59    |
| Trade Report—                                              |       |
| Market Summary.....                                        | 60    |
| Metal Market.....                                          | 60    |
| The Scully Stocks of Sheets.....                           | 61    |
| The Pig Iron Market.....                                   | 61    |
| Chicago Report.....                                        | 61    |
| The Hardware Trade.....                                    | 62    |
| Notes on Prices.....                                       | 62    |
| Trade Notes.....                                           | 63    |
| Metal and Miscellaneous Prices.....                        | 64    |
| Labor Exchange.....                                        | 68    |



# ROOFING SUPPLIES, METALS, TIN PLATES, &c.

REVISED SEPTEMBER 12, 1902.

| Aluminum—                                                           |        |        |        |
|---------------------------------------------------------------------|--------|--------|--------|
| No. 1 Aluminum (guaranteed over 99% Pure), in ingots for remelting. |        |        |        |
| Small lots.....                                                     | 37¢    |        |        |
| 100-lb lots.....                                                    | 35¢    |        |        |
| Aluminum Sheet, B. & S. gauge.                                      |        |        |        |
| In lots of 50 lbs or more.                                          |        |        |        |
| Wider than.....                                                     | 14-in. | 14-in. | 24-in. |
| And including.....                                                  | 14-in. | 24-in. | 30-in. |
| Nos 13 to 19.....                                                   | \$0.42 | \$0.44 | \$0.47 |
| " 20.....                                                           | .44    | .46    | .49    |
| " 21 to 23.....                                                     | .46    | .48    | .51    |
| " 24.....                                                           | .46    | .50    | .53    |
| " 25.....                                                           | .47    | .51    | .54    |
| " 26.....                                                           | .47    | .54    | .59    |
| " 27.....                                                           | .48    | .57    | .62    |
| " 28.....                                                           | .48    | .57    | .64    |
| " 29.....                                                           | .49    | .60    | .69    |
| " 30.....                                                           | .50    | .64    | .77    |
| Note.—Lots of less than 50 lbs 5¢ per lb extra.                     |        |        |        |

| Antimony—      |                 |
|----------------|-----------------|
| Cookson.....   | 10¢ @ 10 1/4¢   |
| Hallett's..... | 8 3/4¢ @ 8 1/2¢ |
| U.S.....       | 8 1/2¢ @ 8 1/4¢ |

|                            |     |
|----------------------------|-----|
| Brass, Roll and Sheet..... | 30% |
|----------------------------|-----|

| Conductors—                              |              |
|------------------------------------------|--------------|
| Corrugated.                              |              |
| Round or Square.—                        |              |
| Galvanized 1/2 or more, N'st'd.....      | 75%          |
| Not Nested.....                          | 70 & 12 1/2% |
| Plain Round, 1/2 or more.....            | 75%          |
| Nested.....                              | 70 & 12 1/2% |
| Galvanized, Plain Round, Not Nested..... | 70 & 12 1/2% |

|                        |               |
|------------------------|---------------|
| Spiral Lock Seam Pipe— |               |
| Galvanized.....        | 60 @ 60 & 10% |

| Spiral Riveted. |     |
|-----------------|-----|
| Galvanized..... | 40% |

|                                                                      |  |
|----------------------------------------------------------------------|--|
| See also Elbows and Shoes; Eave Trough Miters; Strainers, Conductor. |  |
|----------------------------------------------------------------------|--|

| Conductor Strainers—     |  |
|--------------------------|--|
| See Strainers, Conductor |  |

| Copper—                              |                   |
|--------------------------------------|-------------------|
| Lake Ingot.....                      |                   |
| Casting.....                         | 12 1/2¢ @ 12 1/4¢ |
| Sheet and Bolt.....                  | 18¢ @ 18 1/2¢     |
| Cold Rolled Sheets.....              | 19¢ @ 19 1/2¢     |
| Cold Rolled and Polished Sheets..... | 20¢ @ 20 1/2¢     |
| Planished Sheets.....                | 21¢ @ 21 1/2¢     |
| Bottoms, Plts and Flats.....         | 22¢ @ 22 1/2¢     |

| Eave Trough Galvanized |              |
|------------------------|--------------|
| Territory.....         |              |
| Eastern.....           | L. C. L. 80% |
| Central.....           | 75 & 17 1/2% |
| Southern.....          | 75 & 17 1/2% |
| S. Western.....        | 75 & 17 1/2% |
| Terms, 2% for cash.    |              |

| Eave Trough Mitres—    |           |
|------------------------|-----------|
| Lap or Slip Joint..... | 11st, 25% |

| Elbows—Plain Adjustable— |  |
|--------------------------|--|
| Eastern List.            |  |

|                     |     |
|---------------------|-----|
| Tin.....            | 30% |
| Galvanized.....     | 30% |
| Perfect Elbows..... | 40% |

| Stove Pipe— |                 |
|-------------|-----------------|
| Four-Piece  |                 |
| No. 1.....  | 4 1/2¢ @ 4 1/4¢ |
| No. 2.....  | .85 @ .80       |
| No. 3.....  | .85 @ .80       |

| Elbows and Shoes— |     |
|-------------------|-----|
| Galvanized.....   | 60% |

| Gasoline—               |  |
|-------------------------|--|
| See Petroleum Products. |  |

| Iron, Sheet—Black.  |      |      |
|---------------------|------|------|
| One Pass, C. R.     |      |      |
| Soft Steel.         |      |      |
| Nos. 14 to 16.....  | 3.25 | 3.30 |
| Nos. 18 to 21.....  | 3.35 | 3.40 |
| Nos. 22 to 24.....  | 3.45 | 3.50 |
| Nos. 25 and 26..... | 3.55 | 3.60 |
| No. 27.....         | 3.65 | 3.70 |
| No. 28.....         | 3.75 | 3.80 |

| Russia, Planished, &c.                      |            |   |
|---------------------------------------------|------------|---|
| Genuine Russia, accord-                     |            |   |
| ing to assortment.....                      | 11 @ 14    | ¢ |
| Do. Stained.....                            | 6 @ 10 1/2 | ¢ |
| Patent Planished, 1/2 B. A. 11¢; B. 10¢ net |            |   |

| Galvanized.                                     |             |   |
|-------------------------------------------------|-------------|---|
| Nos. 14 and 16.....                             | 3.40 @ 3.45 | ¢ |
| Nos. 18 and 20.....                             | 3.65 @ 3.75 | ¢ |
| Nos. 22 and 24.....                             | 3.95 @ 4.05 | ¢ |
| No. 26.....                                     | 4.20 @ 4.35 | ¢ |
| No. 27.....                                     | 4.50 @ 4.65 | ¢ |
| No. 28.....                                     | 4.80 @ 4.95 | ¢ |
| No. 30.....                                     | 5.15 @ 5.30 | ¢ |
| No. 20 and lighter, 36 inches wide, 25¢ higher. |             |   |

| Lead—                                |              |
|--------------------------------------|--------------|
| American Pig.....                    | 4.45 @ 4 1/2 |
| Bar.....                             | 5 @ 5 1/2    |
| Pipe.....                            | 6 @ 6 1/2    |
| Tin Lined Pipe.....                  | 12 1/2 @ 13  |
| Sheet Lead.....                      | 7 1/2 @ 8    |
| Old Lead in exchange, 3 1/2¢ per lb. |              |

| Mitres Eave Trough—     |  |
|-------------------------|--|
| See Eave Trough Mitres. |  |

| Nickel—     |         |
|-------------|---------|
| Per lb..... | 55 @ 60 |

| Paints, Oils &c.—                    |               |
|--------------------------------------|---------------|
| Leads—                               |               |
| Lead, American White, in Oil:        |               |
| Lots of 500 lb or over.....          | 8 1/4 @ 8 1/2 |
| Lots less than 500 lb.....           | 6 1/2 @ 6 3/4 |
| Lead, White, in oil, 25 lb tin       |               |
| palls, add to keg price.....         | 1/2           |
| Lead, White, in oil, 13 1/2 lb tin   |               |
| palls, add to keg price.....         | 1             |
| Lead, White, in oil, 1 to 5 lb as-   |               |
| sorted tins, add to keg price.....   | 1 1/2         |
| Lead, White, Dry in bbls.....        | 5 1/4 @ 6     |
| Lead, Red, bbls, 1/2 bbls. and kegs: |               |
| Lots 500 lb or over.....             | 6             |
| Lots less than 500 lb.....           | 6 1/2         |

| Oils—                              |             |
|------------------------------------|-------------|
| Linseed, City, raw.....            | 58 @ 59 1/2 |
| Linseed, City, boiled.....         | 60 @ 60 1/2 |
| Linseed State and West'n, raw..... | 57 @ 57 1/2 |

| Spirits Turpentine—   |             |
|-----------------------|-------------|
| In Southern bbls..... | 48 @ 48 1/2 |
| In machine bbls.....  | 49 @ 49 1/2 |

| Putty—                      |        |
|-----------------------------|--------|
| In bulk.....                | \$2.25 |
| In bladders.....            | 2.25   |
| In cans 12 lb to 25 lb..... | 2.25   |
| In cans 1 lb to 5 lb.....   | 3.25   |

| Petroleum Products—          |                 |
|------------------------------|-----------------|
| In Barrels (Barrel Included) |                 |
| Stove Gasoline.....          | 10 1/2 @ 11 1/2 |
| Kerosene.....                | 12 @ 13 1/2     |

| Pipe, Block Tin— |     |
|------------------|-----|
| Per lb.....      | 37¢ |

| Pipe Drain— |     |
|-------------|-----|
| Per lb..... | 40% |

| Pipe, Spiral—   |  |
|-----------------|--|
| See Conductors. |  |

## Registers—

| List Sept. 2, 1901                    |     |
|---------------------------------------|-----|
| Black Japanne.....                    | 70% |
| White Japanne.....                    | 70% |
| Nickel Plated.....                    | 70% |
| Bronze Finishes in Imitation of Gold, |     |
| Silver, Copper or Bronze.....         | 70% |
| Electroplated in Brass, Bronze or     |     |
| Copper.....                           | 70% |
| White Porcelain.....                  | 80% |
| Solid Brass and Bronze Metal.....     | 50% |

## Roofing Material—

|                         |                           |
|-------------------------|---------------------------|
| 1 Ply Tarred Paper..... | ton, \$31.00 @ 32.00      |
| 2 Ply Tarred Paper..... | roll, 108 sq. ft. 55 @ 60 |
| 3 Ply Tarred Paper..... | roll, 108 sq. ft. 80 @ 85 |
| Slater's Felt.....      | ton, \$35.00 @ 36.00      |
| Roofing Pitch.....      | bbl, \$2.60               |

## Rosin—

| Common and Good—Strainer. |                      |
|---------------------------|----------------------|
| Rosin, C. & D.....        | bbl, \$1.57 @ \$1.60 |
| Rosin, E. & F.....        | bbl, 1.65 @ 1.72 1/2 |
| Rosin, G. & H.....        | bbl, 1.75 @ 1.90     |
| Rosin, I. & K.....        | bbl, 2.35 @ 3.00     |
| Rosin, M. & N.....        | bbl, 3.35 @ 3.70     |

## Shoes and Elbows—

See Elbows and Shoes.

## Slate Roofing—

f. o. b. oars, Quarry Station.

| Pennsylvania:                    |                 |
|----------------------------------|-----------------|
| Best Bangor, 1/2 sq.....         | \$3.75 @ \$6.00 |
| No. 1 Bangor Ribbon, 1/2 sq..... | 3.50 @ 3.75     |
| Pen Argyle, 1/2 sq.....          | 3.50 @ 4.50     |
| Peach Bottom, 1/2 sq.....        | 5.25 @ 6.35     |
| No. 1 Chapman, 1/2 sq.....       | 3.75 @ 4.75     |
| No. 1 Penna. Black, 1/2 sq.....  | 3.15 @ 4.15     |
| Unfading Washington Ban-         |                 |
| gor, 1/2 sq.....                 | 3.00 @ 4.50     |

| Vermont:                     |                 |
|------------------------------|-----------------|
| No. 1 Sea Green, 1/2 sq..... | \$2.25 @ \$3.50 |
| Purple, 1/2 sq.....          | 4.50 @ 5.00     |
| Unfading Green, 1/2 sq.....  | 4.25 @ 5.25     |
| Red, 1/2 sq.....             | 7.00 @ 11.00    |

| Maine:                          |               |
|---------------------------------|---------------|
| Brownville, Unfading Black..... |               |
| No. 1, 1/2 sq.....              | \$5.25 @ 7.50 |

| Solder—                   |             |
|---------------------------|-------------|
| 1/2 & 1/4 guaranteed..... | 19 @ 19 1/2 |
| No. 1.....                | 18 1/2 @ 18 |

Prices of Solder Indicated by private brands vary according to composition.

| Soldering Fluids—                 |           |
|-----------------------------------|-----------|
| —Per Pound.                       |           |
| Concentrated Flux.....            | 4c        |
| Eureka Flux:                      |           |
| Triple Strength.....              | 3c        |
| Extra Concentrated.....           | 4 1/2c    |
| Crystal.....                      | 7c        |
| Gedney's Fluid.....               | 2c        |
| Lennox Fluid.....                 | 2c        |
| Perfection Flux.....              | 3c        |
| Yager's Salts, 1 lb. bottles..... | each, 50¢ |
| 5 lb. bottles, per lb., 45¢       |           |

| Soldering Coppers— |         |
|--------------------|---------|
| Per lb.....        | 22 @ 24 |

| Spelter—             |               |
|----------------------|---------------|
| Western Spelter..... | 6 1/2 @ 6 3/4 |

| Spiral Pipe—    |  |
|-----------------|--|
| See Conductors. |  |

| Stove Pipe Elbows—      |  |
|-------------------------|--|
| See Elbows, Stove Pipe. |  |

| Stove Trucks—      |  |
|--------------------|--|
| See Trucks, Stove. |  |

## Strainers, Conductor—

|                 |     |
|-----------------|-----|
| Galvanized..... | 50% |
|-----------------|-----|

## Tin Pigs and Bars—

|                               |             |
|-------------------------------|-------------|
| Banca, pigs, 1/2 lb.....      | 28 @ 28 1/2 |
| Straits, pigs, 1/2 lb.....    | 28 @ 28 1/2 |
| Straits, in bars, 1/2 lb..... | 29 @ 29 1/2 |

## Tin Plates American

### Charcoal Plates, Bright—

N. B.—The price of 20 x 28 sizes double the price of 14 x 20.

| Calland Grade:      |        |
|---------------------|--------|
| IC, 14 x 20.....    | \$8.75 |
| IX, 14 x 20.....    | 8.25   |
| IXX, 14 x 20.....   | 9.50   |
| IXXX, 14 x 20.....  | 10.75  |
| IXXXX, 14 x 20..... | 12.00  |

| Melyn Grade:        |       |
|---------------------|-------|
| IC, 14 x 20.....    | 8.25  |
| IX, 14 x 20.....    | 7.75  |
| IXX, 14 x 20.....   | 9.00  |
| IXXX, 14 x 20.....  | 10.25 |
| IXXXX, 14 x 20..... | 11.50 |

| Allaway Grade:      |       |
|---------------------|-------|
| IC, 14 x 20.....    | 5.75  |
| IX, 14 x 20.....    | 6.85  |
| IXX, 14 x 20.....   | 7.95  |
| IXXX, 14 x 20.....  | 9.05  |
| IXXXX, 14 x 20..... | 10.15 |

| Coke Plates, Bright—                               |               |
|----------------------------------------------------|---------------|
| Bessemer Steel, or equal to J. I. O., 14 x 20..... | \$4.90 @ 5.00 |
| B. Grade, full weight.....                         |               |
| IX, 14 x 20.....                                   | \$6.00        |

N. B.—The reduction per box on lighter plates than IC, 14 x 20, is as follows:

|             |     |
|-------------|-----|
| 100 lb..... | 15¢ |
| 95 lb.....  | 20¢ |
| 90 lb.....  | 25¢ |
| 85 lb.....  | 30¢ |

| Terne Plates—                                                                                                                                                                                            |                 |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|
| N. B.—The following prices are for IC 20 x 28, the rate for 14 x 20 being half as much. IX is usually held at \$2 per box advance for 8 to 10 lb coating and \$2.50 to \$3 advance for 15 lb and upward. |                 |
| About 40 lb coating.....                                                                                                                                                                                 | \$16.00 @ 16.50 |
| About 30 lb coating.....                                                                                                                                                                                 | 15.25 @ 15.75   |
| About 20 lb coating.....                                                                                                                                                                                 | 13.25 @ 13.75   |
| About 15 lb coating.....                                                                                                                                                                                 | 11.25 @ 11.75   |
| About 8 lb coating.....                                                                                                                                                                                  | 9.50 @ 10.00    |

| Boiler Plates, American—        |         |
|---------------------------------|---------|
| IXX, 14 x 26, (112 sheets)..... | \$12.50 |
| IXX, 14 x 28, (112 sheets)..... | 13.50   |
| IXX, 14 x 31, (112 sheets)..... | 15.00   |

| Troughs Eave—    |  |
|------------------|--|
| See Eave Trough. |  |

| Trucks, Stove—                       |         |
|--------------------------------------|---------|
| Improved Lock Frame, per doz.....    | \$15.00 |
| Steel Lock Frame, per doz.....       | 18.00   |
| Daisy Improved pattern, 1/2 doz..... | 18.00   |

| Tubes and Tubing—                                   |     |
|-----------------------------------------------------|-----|
| Brazed Brass, List June 8, 1898.....                | 40% |
| Copper and Bronze, 3c per lb. list more than Brass. |     |
| Seamless Brass Tubes, net list Feb. 6, 1899         |     |
| Tin.....                                            | 50% |
| Galvanized.....                                     | 50% |
| Fittings for do.....                                | 40% |

| Zinc—                    |               |
|--------------------------|---------------|
| 600 lb casks 1/2 lb..... | 63 1/2        |
| Per lb.....              | 7 1/2 @ 7 1/4 |

# PLUMBERS' AND STEAM FITTERS' SUPPLIES.

## Boilers, Galvanized—

| Standard Boilers:             |        |
|-------------------------------|--------|
| 30 gal.....                   | 72 1/2 |
| 35 and 40 gal.....            | 70     |
| Other sizes up to 52 gal..... | 65     |
| 52 gal. and above.....        | 65 & 5 |

| Extra Heavy Boilers:   |        |
|------------------------|--------|
| 18 to 52 gal.....      | 60     |
| 53 gal. and above..... | 50 & 5 |

## Brass Work, Plumbers'—

List of December 7, 1896.

| Compression:                          |          |
|---------------------------------------|----------|
| Basin Cocks.....                      | 60 @ 10% |
| Bath Cocks and Double Bath Cocks..... | 60 @ 10% |
| Bibs.....                             | 60 @ 10% |
| Bibs, Flanged.....                    | 60 @ 10% |

| Fuller:                       |                   |
|-------------------------------|-------------------|
| Bibs.....                     | 70%               |
| Basin Cocks, Nos. 1 to 4..... | 70%               |
| Bath Cocks, No. 4.....        | \$2.40 each net</ |



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Smith & Anthony Co., Boston, Mass.

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**Iron and Steel, Sheet. (See Sheets,  
Iron and Steel.)**

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Amer. Sheet Steel Co., New York.

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Berger Mfg. Co., Canton, O.

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Colwell Lead Co., 63 Centre St., N. Y.

**Lead Pipe Couplings.**  
Anderson Coupling Co., Portland, Ct.

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Washburne, E. G. & Co., 46 Cortlandt  
St., N. Y.

**Metal Ceilings. (See Ceilings, Me-  
talic.)**

**Metal Polish.**  
Paul, J. C. & Co., Chicago, Ill.

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Asheville Mica Co., Asheville, N. C.

**Mica.**  
Huse, Joseph & Son, Boston, Mass.

**Mica.**  
Munsell, Eugene & Co., 218 Water St.,  
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National Enamelling & Stamping Co.,  
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**Nickel Plating Outfits.**  
Hanson & Van Winkle Co., Newark,  
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**Nickel Plating Outfits.**  
Zucker & Levett & Loeb Co., 526-530  
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Blodgett, G. S. Co., Burlington, Vt.

**Ovens, Portable.**  
Howes, S. M. Co., Boston, Mass.

**Ovens, Portable.**  
Monarch Stove & Mfg. Co., Mansfield, O.

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**Patterns.**  
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**Patterns.**  
Gray, G. L., Galesburg, Ill.

**Patterns.**  
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Stamford Foundry Co., Stamford, Ct.  
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Union Stove Works, 70 Beekman St.,  
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Weir Stove Co., Taunton, Mass.  
White, Warner Co., Taunton, Mass.  
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Clark, Geo. M. & Co., Chicago, Ill.  
Dangler Stove & Mfg. Co., Cleveland,  
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Dighton Furnace Co., Taunton, Mass.  
Hower, S. M. Co., Boston, Mass.  
Metropolis Sheet Metals & Stove Re-  
pairing Co., Newark, N. J.  
Monarch Stove & Mfg. Co., Mansfield, O.  
Union Stove Works, 70 Beekman St.,  
N. Y.

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and Gasoline.**  
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Dangler Stove & Mfg. Co., Cleveland,  
Ohio.

Heath, C. C. & Co., Baltimore, Md.  
Monarch Stove & Mfg. Co., Mansfield, O.  
Schneider & Trenkamp Co., Clevel-  
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Louis, Mo.  
Union Stove Works, 70 Beekman St.,  
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Meurer Bros. Co., Brooklyn, N. Y.  
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Colwell Lead Co., 63 Centre St., N. Y.

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**Water Heaters.**  
Kemp, C. M. Mfg. Co., Baltimore, Md.

**Wind Gates.**  
Miner & Peck Mfg. Co., New Haven, Ct.

SEE ALPHABETICAL INDEX, PAGE 65.

# THE METAL WORKER.

With which is Incorporated The Stove and Tin Trade Journal, The Sheet Metal Builder, and Metal.

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Notices under this heading of reasonable length are inserted free of charge. Only those relating to employment are admitted. Write distinctly on one side of paper only, and do not use postal cards.

Original letters of reference should not be inclosed with replies to advertisements appearing in these columns as they are frequently mislaid and lost. A copy of the reference will serve the purpose.

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At once, first-class FURNACE and BOILER SALESMAN; one who understands his business and is acquainted with the trade in Northern Illinois and Southern Wisconsin. "Boilers," care *The Metal Worker*, 1205 Fisher Building, Chicago, Ill. Sept. 13

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SALESMAN well acquainted with the steam fitters to travel in the States of New York and Pennsylvania; give references and salary expected. "Steam Goods," care *The Metal Worker*, New York. Sept. 13

At once, two first-class, all-round PLUMBERS; one to do steam fitting; union wages, \$3.25 per day of nine hours. D. H. Williams, Schenectady, N. Y. Sept. 13

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CORNICE WORKERS; 100 wanted; cutters and bench hands; good men only; union shop. David Lupton's Sons Company, Allegheny avenue and Tulip street, Philadelphia, Pa. Sept. 13

First-class CORNICE and SKYLIGHT MAKERS; must be able to cut out, put together and erect same; good wages and steady work for the right man. P. O. Box 592, New Haven, Conn. Sept. 13

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A competent FOREMAN in cornice shop, Manhattan; one who is accustomed to handling men; sober and reliable. "Gage," care *The Metal Worker*, New York. Sept. 6

First-class tinsmith, blower work and ventilating, as ACTING WORKING FOREMAN; must be able to cut patterns and work from plans; steady position. Knaup Sheet Iron Works, 67 North Eighth street, Brooklyn, N. Y. Sept. 6

A first-class TINSMITH; one accustomed to furnace work; a steady job to the right man; must be steady and reliable. George A. Anthoine, Biddeford, Me. Sept. 6

An experienced STOVE and FURNACE SALESMAN to cover Pennsylvania trade; give full particulars as to experience and state salary wanted. Address "A. B.," care *The Metal Worker*, New York. Sept. 6

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By a young man, age 20 years; has had three years' experience at furnace and tinsmithing work; would like a position with a good house where there is a chance of advancement. "W. F.," care *The Metal Worker*, New York. Sept. 13

As FOREMAN and CUTTER in a large cornice shop; can give best of references; 34 years of age; married and strictly temperate. "Cornice," care *The Metal Worker*, 1205 Chemical Building, St. Louis, Mo. Sept. 13

Young man, 25 years old, who thoroughly understands the tin plate and sheet iron business; was connected with one of the leading metal houses of New York City for a number of years. "Tin Plate," care *The Metal Worker*, New York. Sept. 13

By TIN, SHEET IRON and COPPER WORKER; shop, roofing and furnace work; copper finials, &c.; good workman, sober and reliable. Wm. Thomas, Tannersville, N. Y. Sept. 13

By man 33 years old, 12 years' experience, as practical PLUMBER, STEAM and HOT WATER FITTER; a hustler; can estimate and read plans; capable of doing any kind of new work or overhauling old work; has had charge of shop and men; correspondence solicited from reliable parties only. "E. W.," care *The Metal Worker*, New York. Sept. 13

By a first-class electrician, 18 years' experience, in any electrical construction work; nine years' experience as foreman in trolley work and telephone. "A. G. B.," care *The Metal Worker*, New York. Sept. 13

A gentleman acquainted with trade in New York State, with 20 years' experience in heating lines, will be open for engagement January 1, 1903, for same territory, with Rochester as headquarters; thoroughly acquainted with hot air furnace work, steam and water heating and combination systems of heating; either on salary or commission; reference; all correspondence strictly confidential. P. O. Box 292, Rochester, N. Y. Sept. 13

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By a first-class, practical SANITARY PLUMBER, employment in city or country; is a first-class man on jobbing and overhauling; 30 years' experience. James Clark, Box 2, Union Hill P. O., N. J. Sept. 13

By a competent, sober STEAM FITTER and PLUMBER, to take charge of a shop; best of references. "Plumber," 408 Seventh avenue, Charleston, Ill. Sept. 13

As SUPERINTENDENT or FOREMAN manufacturing sheet metal specialties, novelties, brass goods, malleable and gray iron, patented hardware; an expert, all-around mechanic with nine years' experience as foreman; have good executive ability. W. W. Whitehead, 235 Orleans street, Chicago, Ill. Sept. 13

By PLUMBER at jobbing and has some knowledge of outside tin work; steady work, \$2 a day; will go anywhere; strictly sober. Box 428, Litchfield, Conn. Sept. 13

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By a good, practical TIN and SHEET IRON WORKER for in and outside work; 22 years' experience; steady position desired; German; married; please state wages. Geo. Belnkampen, 75 Millne street, Bridgeport, Conn. Sept. 13

As PLUMBER and FITTER; can do some tin work; must be steady situation; able to take charge of all branches. "Plumber," General Delivery, Akron, Ohio. Sept. 13

By a first-class TINSMITH, experienced in all the branches of the trade; able to cut patterns and work from plans; have first-class references and wish steady work in city. "P.," care *The Metal Worker*, New York. Sept. 13

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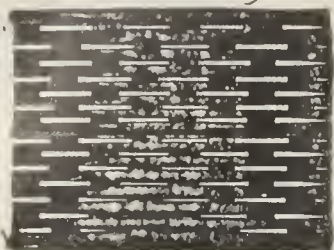
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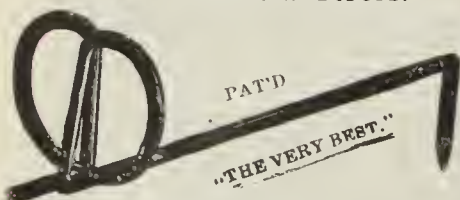


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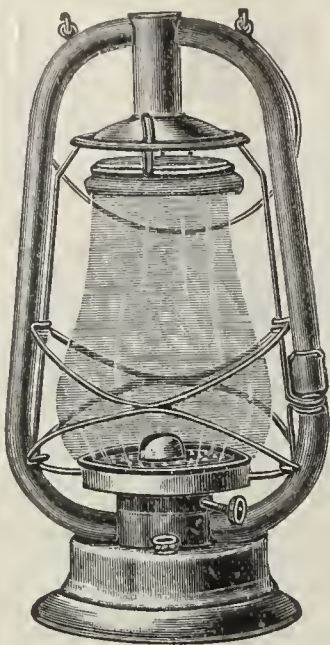
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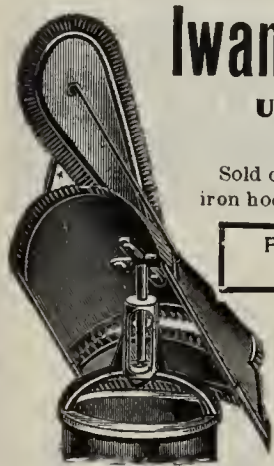
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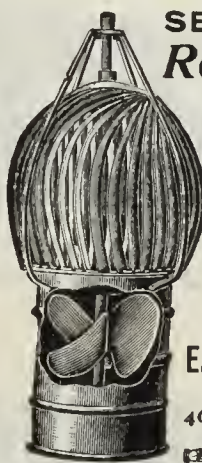
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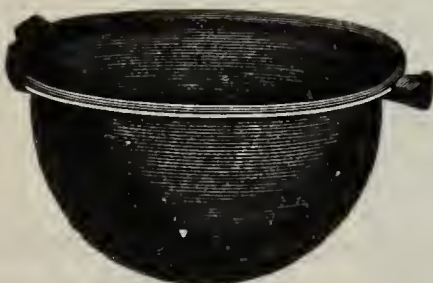
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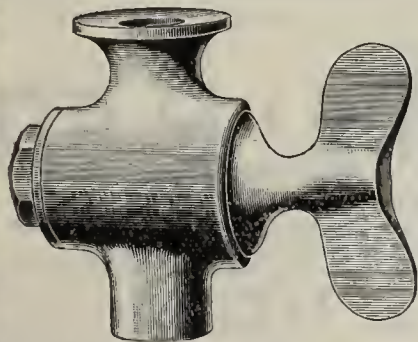
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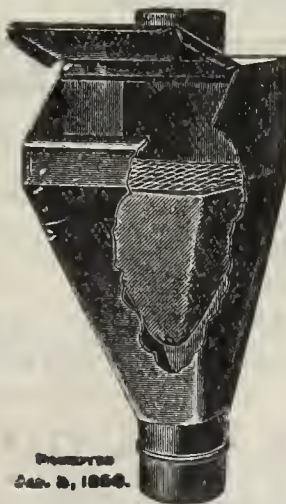
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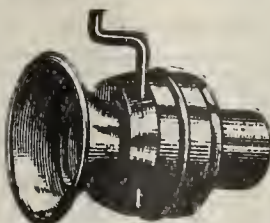
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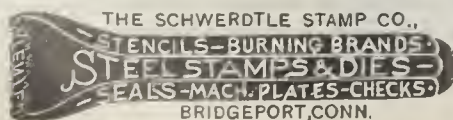
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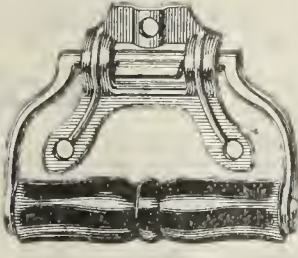
## Ears, Turnbuckles and Handles.



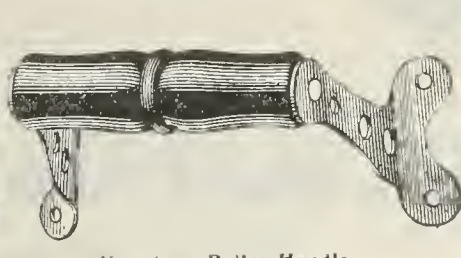
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B. B. Turnbuckle,



Wood Drop Handle.



Keystone Boiler Handle.

Highest Quality, Finest Finish, Largest Stock of all Sizes and Kinds to be found anywhere.

Send for our new 1902 catalogue showing a complete line of Handles, Ears, etc.

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## Horan Stay Gutter Hanger

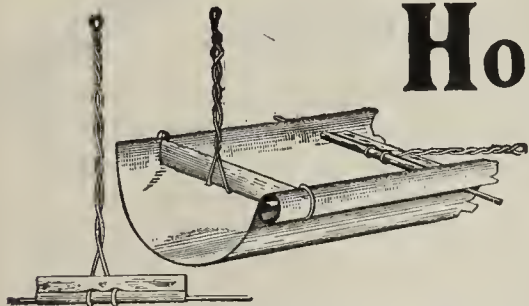
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A REVOLUTION  
IN GUTTER  
HANGING

Four Pounds of Solder and  
One Day's Labor Saved  
on Each Gross USED

CUT NO STAYS  
USE NO SOLDER  
USE NO THUMBOLTS  
USE NO RIVETS

SIZES : 3, 3½, 4, 4½, 5, 6, 7 inches, in Gross Packages  
" 8 and 10 inches, in Half Gross Packages

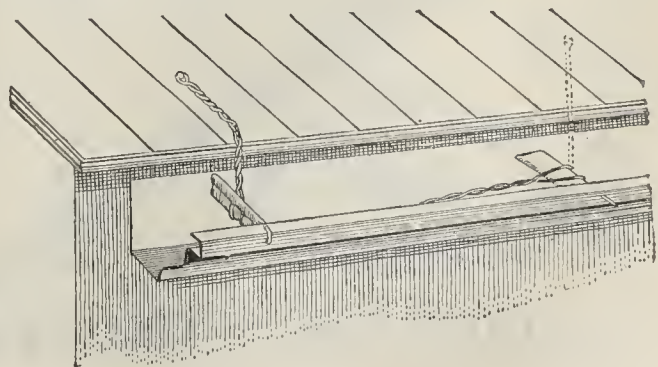


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It is the only perfect combined Stay and Hanger on the market. Its hinge movement enables adjustment at shop. Nothing to do at building but drive nail. Make joints in the bead of gutter with Hanger adjusted without catching under the eaves. Stay wire being adjustable it will hang single or double bead, octagon, O G., Box Gutter or any hanging eave trough. It is the easiest and most rapidly adjusted Hanger in the market and makes the neatest and most substantial job. It will carry more weight than any wire hanger without sagging or springing from the drain line, and is the equal in strength of the steel Hanger. Ask your dealer for it. If he can not supply you write us direct.

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LOUISVILLE, KENTUCKY.





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TANK & SHEET STEEL,  
BOILER & TANK RIVETS,  
BOILER TUBES.

A. B. SCULLY, President.

JOHN B. SCULLY, Secy. &amp; Treas.



MONROE 171.

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AND  
FULTON STREETS.

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TOOL STEEL,  
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"SCULIRON"  
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CHICAGO, ILLS.

## Stock of Black and Galvanized Sheet Steel on Hand

### Black Sheets, No. 14 and Lighter.

| 825   | Sheets | No. | 14 x 24 | in. x 96 | in. | 500   | Sheets | No. | 16 x 28 | in. x 120 | in. | 275   | Bdls. | No. | 20 x 30 | in. x 120 | in. |
|-------|--------|-----|---------|----------|-----|-------|--------|-----|---------|-----------|-----|-------|-------|-----|---------|-----------|-----|
| 260   | "      | "   | 14 x 24 | " x 108  | "   | 2,450 | "      | "   | 16 x 30 | " x 96    | "   | 190   | "     | "   | 20 x 36 | " x 96    | "   |
| 675   | "      | "   | 14 x 24 | " x 120  | "   | 825   | "      | "   | 16 x 30 | " x 108   | "   | 260   | "     | "   | 20 x 36 | " x 120   | "   |
| 782   | "      | "   | 14 x 26 | " x 96   | "   | 2,425 | "      | "   | 16 x 30 | " x 120   | "   | 695   | "     | "   | 22 x 24 | " x 96    | "   |
| 100   | "      | "   | 14 x 26 | " x 108  | "   | 515   | "      | "   | 16 x 36 | " x 77    | "   | 294   | "     | "   | 22 x 24 | " x 101   | "   |
| 675   | "      | "   | 14 x 26 | " x 120  | "   | 1,950 | "      | "   | 16 x 36 | " x 96    | "   | 489   | "     | "   | 22 x 26 | " x 96    | "   |
| 650   | "      | "   | 14 x 28 | " x 96   | "   | 425   | "      | "   | 16 x 36 | " x 108   | "   | 45    | "     | "   | 22 x 26 | " x 120   | "   |
| 690   | "      | "   | 14 x 28 | " x 108  | "   | 4,300 | "      | "   | 16 x 36 | " x 120   | "   | 650   | "     | "   | 22 x 28 | " x 96    | "   |
| 225   | "      | "   | 14 x 28 | " x 120  | "   | 1,150 | "      | "   | 16 x 40 | " x 96    | "   | 48    | "     | "   | 22 x 28 | " x 120   | "   |
| 2,100 | "      | "   | 14 x 30 | " x 96   | "   | 915   | "      | "   | 16 x 40 | " x 120   | "   | 1,053 | "     | "   | 22 x 30 | " x 96    | "   |
| 235   | "      | "   | 14 x 30 | " x 108  | "   | 940   | "      | "   | 16 x 42 | " x 96    | "   | 114   | "     | "   | 22 x 30 | " x 120   | "   |
| 1,500 | "      | "   | 14 x 30 | " x 120  | "   | 1,000 | "      | "   | 16 x 42 | " x 120   | "   | 230   | "     | "   | 22 x 36 | " x 96    | "   |
| 600   | "      | "   | 14 x 36 | " x 77   | "   | 660   | "      | "   | 16 x 48 | " x 77    | "   | 238   | "     | "   | 22 x 36 | " x 120   | "   |
| 1,200 | "      | "   | 14 x 36 | " x 96   | "   | 1,575 | "      | "   | 16 x 48 | " x 96    | "   | 343   | "     | "   | 24 x 24 | " x 96    | "   |
| 750   | "      | "   | 14 x 36 | " x 108  | "   | 600   | "      | "   | 16 x 48 | " x 108   | "   | 652   | "     | "   | 24 x 24 | " x 101   | "   |
| 1,500 | "      | "   | 14 x 36 | " x 120  | "   | 1,000 | "      | "   | 16 x 48 | " x 120   | "   | 265   | "     | "   | 24 x 26 | " x 96    | "   |
| 330   | "      | "   | 14 x 40 | " x 77   | "   | 150   | "      | "   | 16 x 48 | " x 138   | "   | 690   | "     | "   | 24 x 28 | " x 96    | "   |
| 475   | "      | "   | 14 x 40 | " x 96   | "   | 430   | "      | "   | 16 x 48 | " x 144   | "   | 610   | "     | "   | 24 x 30 | " x 96    | "   |
| 660   | "      | "   | 14 x 40 | " x 120  | "   | 2,100 | "      | "   | 18 x 24 | " x 96    | "   | 258   | "     | "   | 24 x 30 | " x 120   | "   |
| 950   | "      | "   | 14 x 42 | " x 96   | "   | 680   | "      | "   | 18 x 24 | " x 108   | "   | 260   | "     | "   | 24 x 36 | " x 96    | "   |
| 985   | "      | "   | 14 x 42 | " x 120  | "   | 1,500 | "      | "   | 18 x 24 | " x 120   | "   | 33    | "     | "   | 24 x 36 | " x 120   | "   |
| 500   | "      | "   | 14 x 48 | " x 77   | "   | 2,350 | "      | "   | 18 x 26 | " x 96    | "   | 69    | "     | "   | 26 x 24 | " x 96    | "   |
| 410   | "      | "   | 14 x 48 | " x 84   | "   | 250   | "      | "   | 18 x 26 | " x 108   | "   | 204   | "     | "   | 26 x 24 | " x 101   | "   |
| 1,175 | "      | "   | 14 x 48 | " x 96   | "   | 1,325 | "      | "   | 18 x 26 | " x 120   | "   | 575   | "     | "   | 26 x 26 | " x 96    | "   |
| 520   | "      | "   | 14 x 48 | " x 108  | "   | 987   | "      | "   | 18 x 28 | " x 96    | "   | 650   | "     | "   | 26 x 28 | " x 96    | "   |
| 1,050 | "      | "   | 14 x 48 | " x 120  | "   | 425   | "      | "   | 18 x 28 | " x 108   | "   | 900   | "     | "   | 26 x 30 | " x 96    | "   |
| 310   | "      | "   | 14 x 48 | " x 127  | "   | 1,100 | "      | "   | 18 x 28 | " x 120   | "   | 195   | "     | "   | 26 x 30 | " x 101   | "   |
| 700   | "      | "   | 14 x 48 | " x 138  | "   | 5,200 | "      | "   | 18 x 30 | " x 96    | "   | 51    | "     | "   | 26 x 30 | " x 108   | "   |
| 600   | "      | "   | 14 x 48 | " x 144  | "   | 1,075 | "      | "   | 18 x 30 | " x 108   | "   | 543   | "     | "   | 26 x 30 | " x 120   | "   |
| 152   | "      | "   | 14 x 54 | " x 96   | "   | 1,700 | "      | "   | 18 x 30 | " x 120   | "   | 112   | "     | "   | 27 x 24 | " x 96    | "   |
| 300   | "      | "   | 14 x 54 | " x 120  | "   | 2,750 | "      | "   | 18 x 36 | " x 96    | "   | 486   | "     | "   | 27 x 24 | " x 101   | "   |
| 395   | "      | "   | 16 x 24 | " x 96   | "   | 925   | "      | "   | 18 x 36 | " x 108   | "   | 52    | "     | "   | 27 x 26 | " x 96    | "   |
| 353   | "      | "   | 16 x 24 | " x 108  | "   | 1,075 | "      | "   | 18 x 36 | " x 120   | "   | 775   | "     | "   | 27 x 28 | " x 96    | "   |
| 300   | "      | "   | 16 x 24 | " x 120  | "   | 1,010 | "      | "   | 18 x 48 | " x 96    | "   | 581   | "     | "   | 27 x 30 | " x 96    | "   |
| 525   | "      | "   | 16 x 26 | " x 96   | "   | 470   | "      | "   | 18 x 48 | " x 120   | "   | 182   | "     | "   | 27 x 30 | " x 101   | "   |
| 611   | "      | "   | 16 x 26 | " x 108  | "   | 430   | Bdls.  | "   | 20 x 24 | " x 96    | "   | 39    | "     | "   | 27 x 30 | " x 120   | "   |
| 800   | "      | "   | 16 x 26 | " x 120  | "   | 515   | "      | "   | 20 x 26 | " x 96    | "   | 205   | "     | "   | 28 x 28 | " x 96    | "   |
| 775   | "      | "   | 16 x 28 | " x 96   | "   | 550   | "      | "   | 20 x 28 | " x 96    | "   | 189   | "     | "   | 28 x 30 | " x 96    | "   |
| 460   | "      | "   | 16 x 28 | " x 108  | "   | 325   | "      | "   | 20 x 30 | " x 96    | "   | 6     | "     | "   | 28 x 30 | " x 120   | "   |

### Galvanized Sheets, No. 16 and Lighter.

| 28    | Sheets | No. | 16 x 24 | in. x 96 | in. | 45  | Bdls. | No. | 20 x 26 | in. x 96 | in. | 26  | Bdls. | No. | 24 x 30 | in. x 120 | in. |
|-------|--------|-----|---------|----------|-----|-----|-------|-----|---------|----------|-----|-----|-------|-----|---------|-----------|-----|
| 10    | "      | "   | 16 x 26 | " x 96   | "   | 112 | "     | "   | 20 x 28 | " x 96   | "   | 256 | "     | "   | 24 x 36 | " x 96    | "   |
| 210   | "      | "   | 16 x 30 | " x 96   | "   | 314 | "     | "   | 20 x 30 | " x 96   | "   | 114 | "     | "   | 24 x 36 | " x 120   | "   |
| 170   | "      | "   | 16 x 30 | " x 120  | "   | 30  | "     | "   | 20 x 36 | " x 96   | "   | 194 | "     | "   | 26 x 26 | " x 96    | "   |
| 2     | Bdls.  | "   | 16 x 36 | " x 96   | "   | 170 | "     | "   | 20 x 36 | " x 120  | "   | 100 | "     | "   | 26 x 28 | " x 96    | "   |
| 22    | Sheets | "   | 16 x 36 | " x 120  | "   | 231 | "     | "   | 22 x 24 | " x 96   | "   | 375 | "     | "   | 26 x 30 | " x 96    | "   |
| 1,936 | "      | "   | 16 x 42 | " x 96   | "   | 123 | "     | "   | 22 x 26 | " x 96   | "   | 87  | "     | "   | 26 x 30 | " x 120   | "   |
| 87    | "      | "   | 16 x 42 | " x 120  | "   | 68  | "     | "   | 22 x 28 | " x 96   | "   | 76  | "     | "   | 27 x 24 | " x 96    | "   |
| 189   | "      | "   | 16 x 48 | " x 96   | "   | 15  | "     | "   | 22 x 30 | " x 96   | "   | 262 | "     | "   | 27 x 28 | " x 96    | "   |
| 174   | "      | "   | 16 x 48 | " x 120  | "   | 147 | "     | "   | 22 x 30 | " x 120  | "   | 100 | "     | "   | 27 x 28 | " x 120   | "   |
| 93    | "      | "   | 18 x 24 | " x 96   | "   | 72  | "     | "   | 22 x 36 | " x 96   | "   | 275 | "     | "   | 27 x 30 | " x 96    | "   |
| 80    | "      | "   | 18 x 30 | " x 96   | "   | 27  | "     | "   | 22 x 36 | " x 120  | "   | 115 | "     | "   | 27 x 30 | " x 120   | "   |
| 100   | "      | "   | 18 x 30 | " x 120  | "   | 169 | "     | "   | 24 x 24 | " x 96   | "   | 41  | "     | "   | 28 x 24 | " x 96    | "   |
| 123   | Bdls.  | "   | 18 x 36 | " x 96   | "   | 74  | "     | "   | 24 x 26 | " x 96   | "   | 190 | "     | "   | 28 x 28 | " x 96    | "   |
| 50    | "      | "   | 18 x 36 | " x 120  | "   | 112 | "     | "   | 24 x 28 | " x 96   | "   | 93  | "     | "   | 28 x 28 | " x 120   | "   |
| 347   | "      | "   | 20 x 24 | " x 96   | "   | 318 | "     | "   | 24 x 30 | " x 96   | "   | 121 | "     | "   | 28 x 30 | " x 96    | "   |

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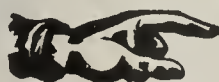
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For the  
STAMP on  
Each Sheet



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N. Y.



**MEURER'S GENUINE  
TINNED  
IRON SHEETS  
I C**



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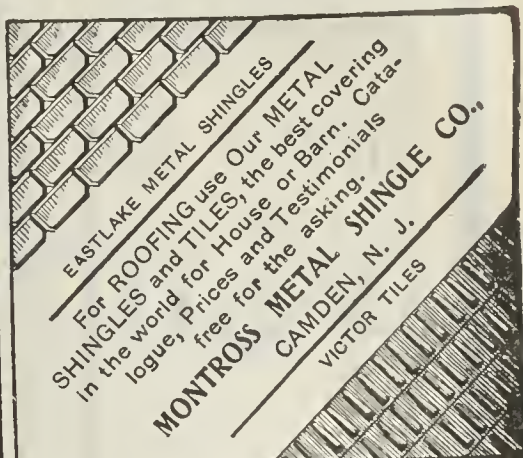
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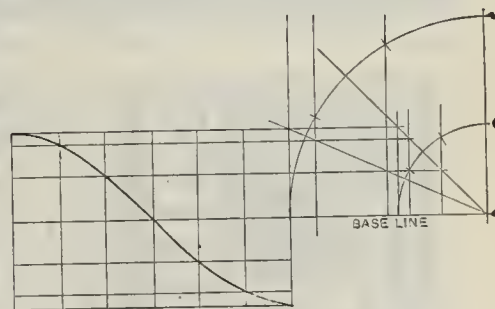
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**THE CINCINNATI STAMPING CO.**  
CINCINNATI, O.

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For Laying Out Pipe Elbows, Miters, and Similar Work in Sheet Metal.

In the accompanying illustration the lines drawn from center, cutting tangents to arcs, and corresponding perpendiculars through their divisions at an equal distance from base line, show the different positions of a pivoted blade on protractor pattern in laying out the  $\frac{3}{4}$  in. miter or half pattern for a square cornered 90° elbow. It is also shown that the arc of a  $\frac{3}{4}$  in. circle with its lines through division points is unnecessary to produce the pattern.

Protractor patterns for any required angle and diameter of pipe, of aluminum, \$5.00.

The same, printed on suitably heavy card board, \$1.25.

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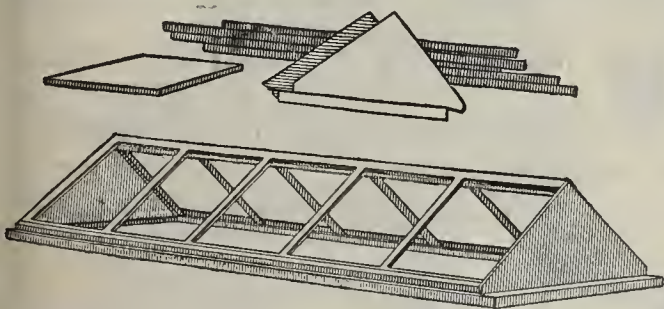
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**T**HAT can be shipped  
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Guaranteed strong and  
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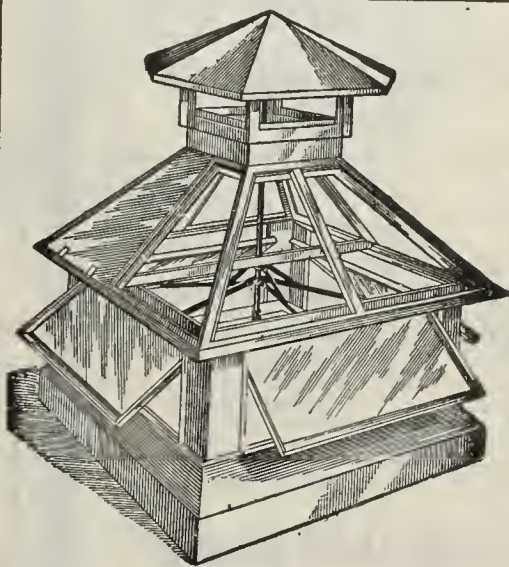
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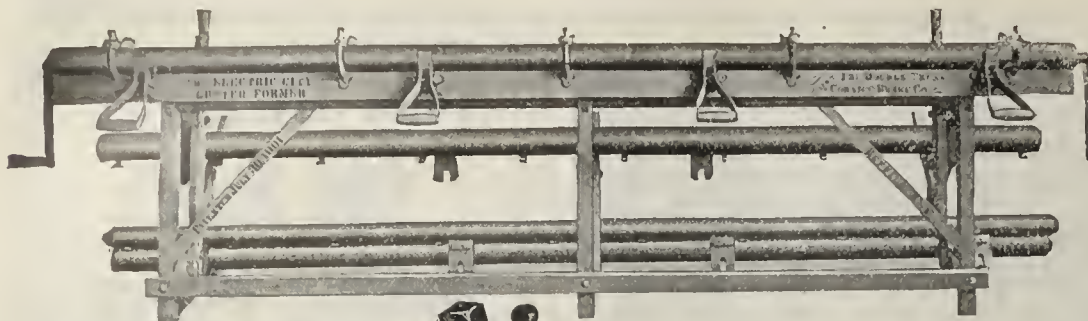
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WITH  
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 Saves 4  
 lbs. of  
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 Also make the  
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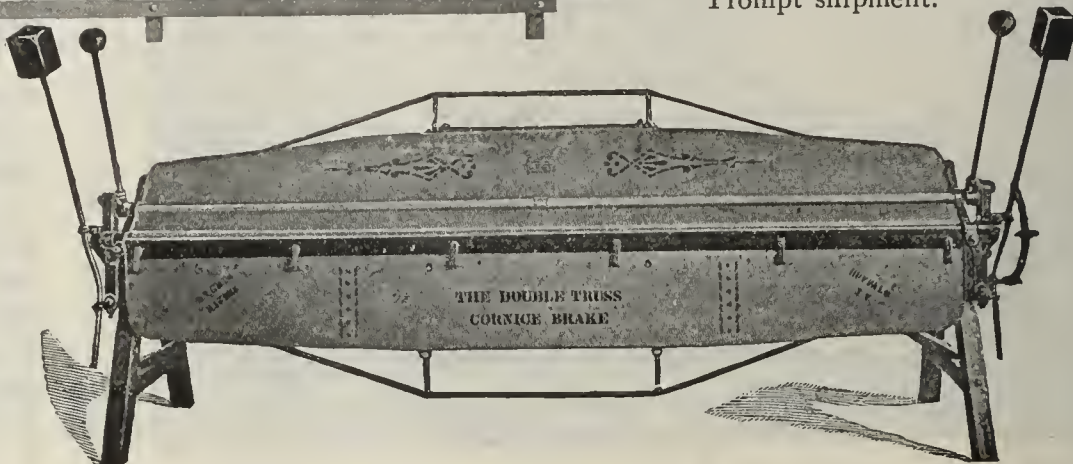




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Until you get  
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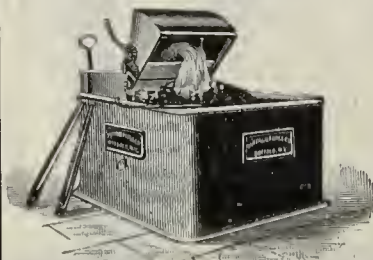
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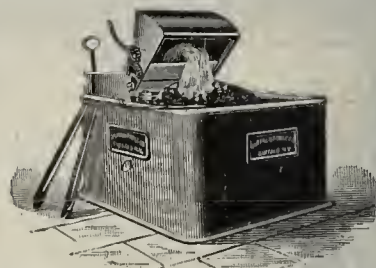
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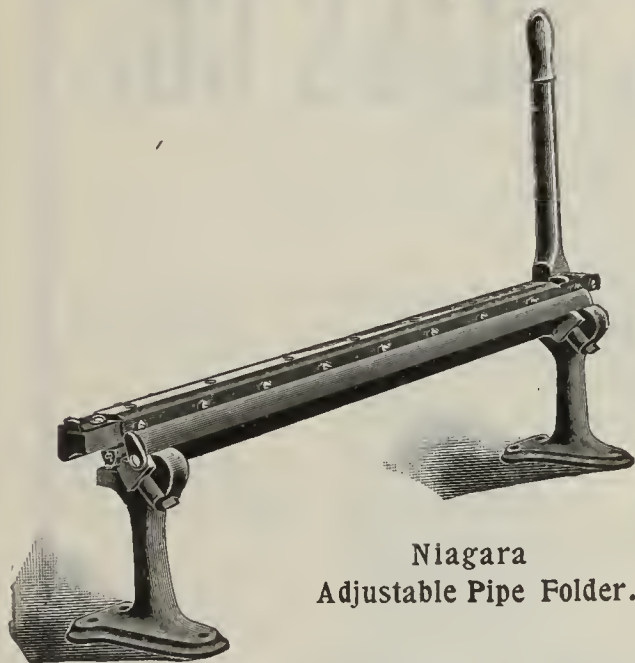
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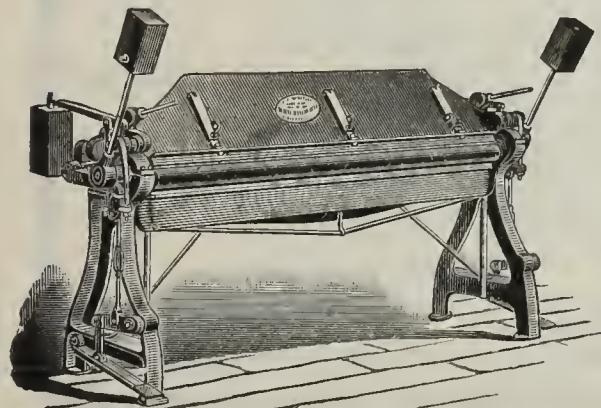
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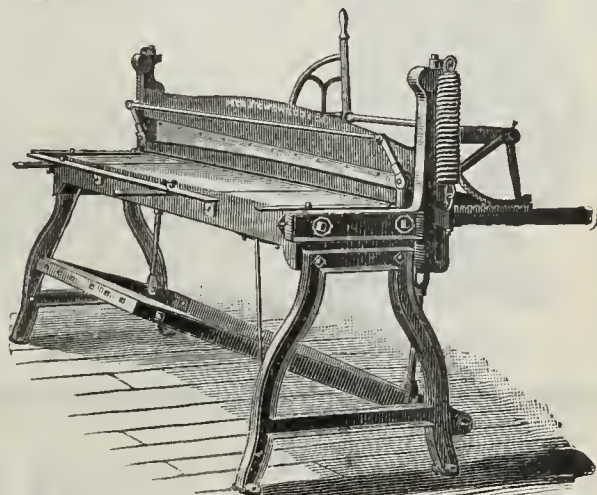
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It will edge 27 iron and tin for roll or flat seam roofing.

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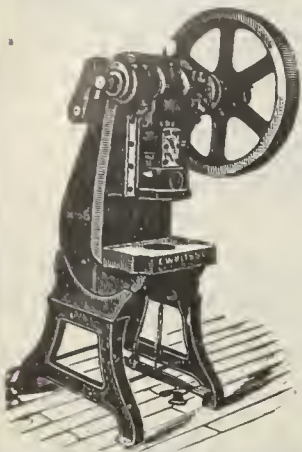


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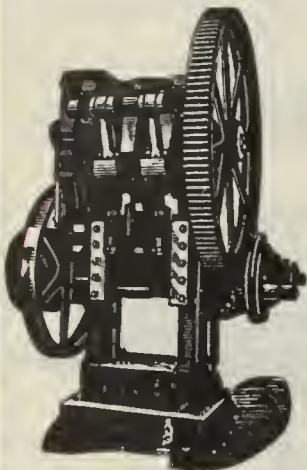
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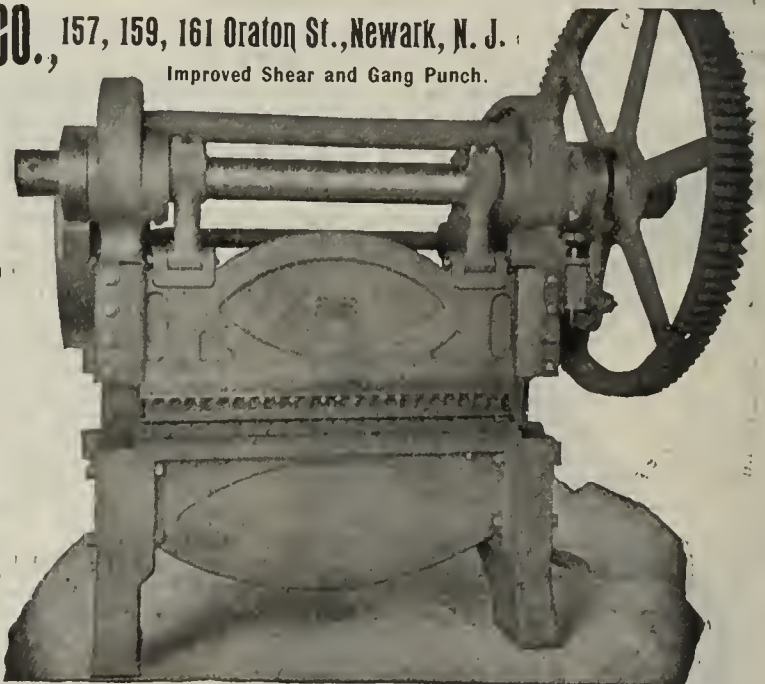
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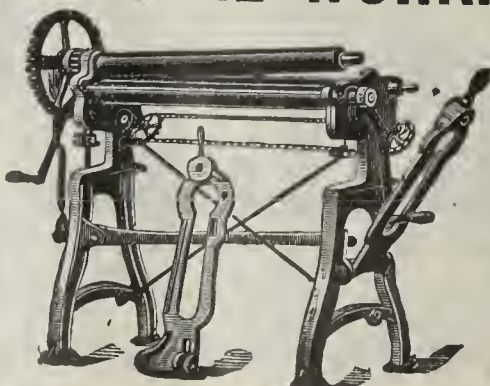
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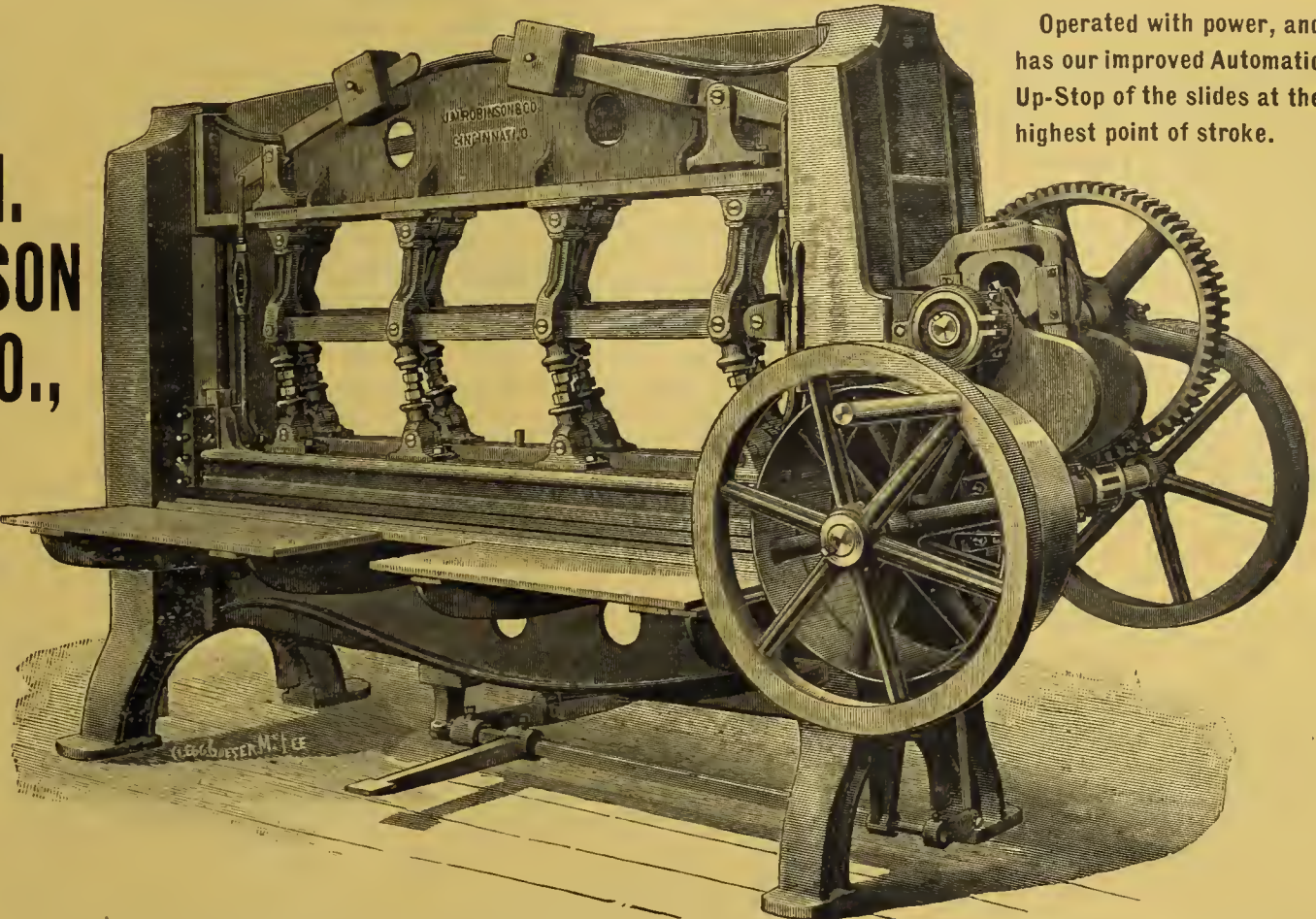




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6, 8, 10 and 12-Foot Lengths.

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225-229  
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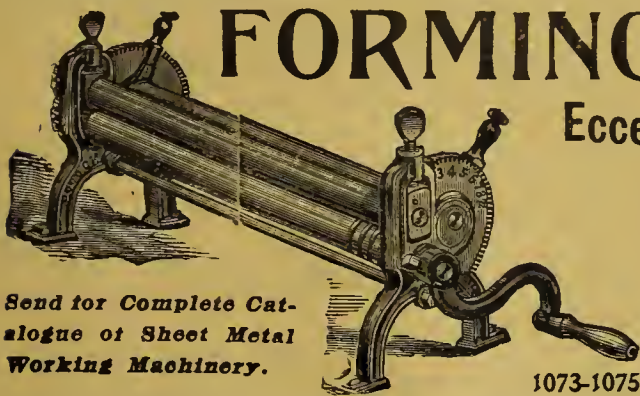


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Outfits for Iron Roofing Establishments a Specialty.

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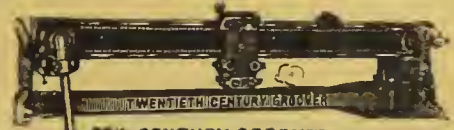
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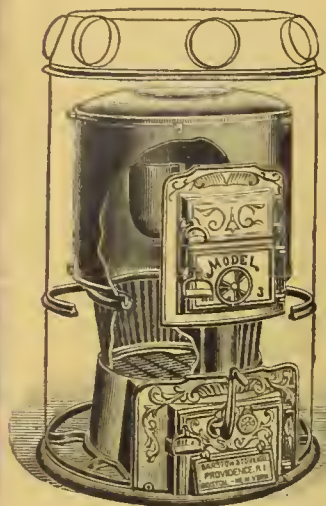
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**ROOFING, CORNICE, TIN, PLUMBING AND HEATING TRADES.**

With which is Incorporated The Stove and Tin Trade Journal, the Sheet Metal Builder, and Metal.

VOL. LVIII.  
 NUMBER 12.

NEW YORK AND CHICAGO, SEPTEMBER 20, 1902.

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*Rogers & Wells - CHI -*

*FRANK B. SWICK*



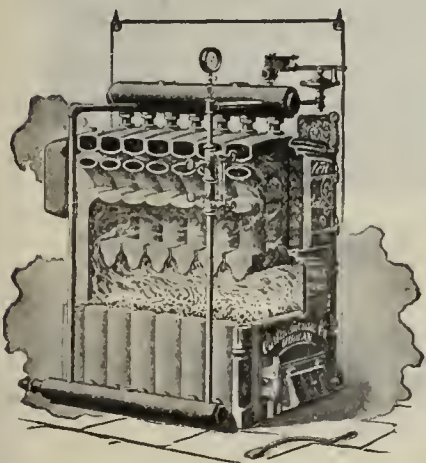
Makers of Heaters since **1847**. Think of it!  
Isn't experience worth something to you? Yes, it certainly is.

Then why not sell

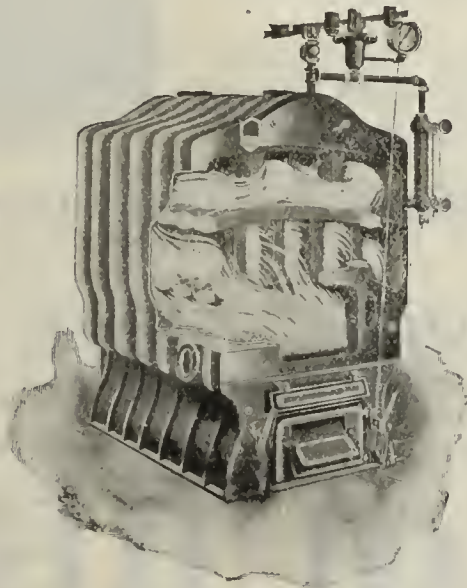
# STEAM and HOT WATER HEATERS,

## Furnaces and Combination Heaters

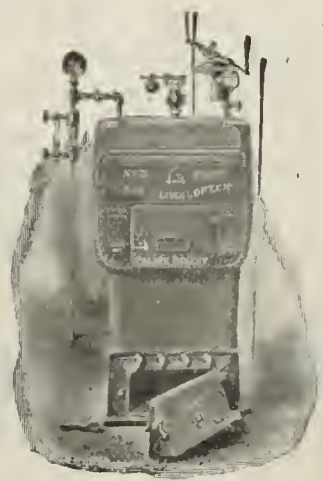
That embody Superior Merits?



Garton "A" Boiler



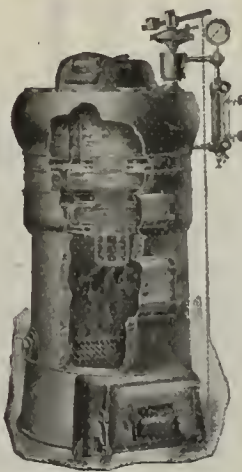
"L" Series Boiler



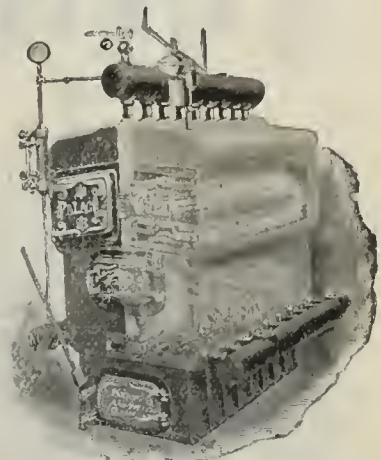
Palace Regent Boiler



Palace King Boiler



"F" Series Boiler



Palace Queen Boiler

*Catalogues upon application.*

## INTERNATIONAL HEATER CO.,

LARGEST MAKERS OF HEATING AND LIGHTING APPARATUS IN THE WORLD,

**UTICA, N. Y.**

**BOSTON.**

**NEW YORK.**

**CHICAGO.**

**DENVER.**

Northwestern Agents: Engineering, Steam & Supplies Company, Minneapolis, Minn.



*"Made where Steel is made."*

## GOOD LUCK and CINDERELLA STEEL RANGES.

We make both lines, and we try to make them right.

We make each individual Range just as good as we can.

*Our Prices are always as low as can be made on Good Goods; usually lower than our competitors'.*

Our Location and our Equipment give us Great Advantages in cost of production.

In order to get the full benefit of these advantages **WE SHARE THEM WITH OUR TRADE.**

This Policy and the Quality of Our Goods has brought us a Magnificent Steel Range Trade.



**Do You Want to Share in a Good Thing? Think it over.**

For catalogues and prices address

**The PITTSBURGH STOVE & RANGE CO.,  
PITTSBURGH, PA.**

Western Agency: W. D. SAGER, Michigan St., Chicago, Ill.

## "THE QUEEN" HOT BLASTS

**ARE ENTIRELY NEW.**

They have all the good features of the most popular stoves of this class. They are **made only in the highest grade** and of the **heaviest and best materials.**

### SPECIAL FEATURES.

**Ash Pit Door** with our Patented Air Tight Register, through which the grate can be operated and clinkers removed instead of fishing them out through the top door with a long poker.

**Large Ash Pit** provided with **Large Ash Pan.** Urn, Nickel Ring and Nickel Plating are first-class and give the stove a fine appearance.

They are better fitted, better finished than any other stove of its class, and **the Price is Right.**

Made in three sizes, 15, 18 and 20. Bodies of Wood's Refined Sheets.



**The Portsmouth Stove & Range Co., Portsmouth, Ohio.**

MORLEY BROTHERS, Wholesale Agents for Michigan, Saginaw, Mich.

**The Busiest Stove and Range Makers on Earth.**



# Crawford

## Cooking-Ranges

### Only One Damper



ingeniously contrived to kindle, bake, check,  
as the cook desires.

Push the damper to the proper location, that's all.  
No guessing, no experimenting, no confusion.  
And it's so simple.

We are originators of

## Removable Nickel-Bands

PATENTED

You will not be sorry if you sell Crawfords

**WALKER & PRATT MFG. CO., Boston**

**FINEST STOVE FACTORY IN THE WORLD.**

# MODEL RUBY

Made for coal or  
wood, with Duplex  
Grate. The oven is  
perfectly square —

18 x 20 x 13 and

20 x 22 x 13

as shown in cut.

This stove is new on  
the market and is of  
the latest design that  
can be had.

Made in both steel  
and cast ovens. This  
stove is also exclu-  
sively made for  
wood.

We ask every  
dealer to order a  
sample and we will  
surprise you on the  
price of this stove.



**HOME STOVE CO., Indianapolis, Ind.**





# Moore's Stoves



## This Sign Draws Trade

You will see it in front  
of the stores of prominent mer-  
chants wherever you go.

JOLIET STOVE WORKS,  
JOLIET, ILLINOIS.



# Important Facts

FOR THE

## ...Dealer to Consider...



"GARLANDS" are used as the standard of comparison by Manufacturer, Merchant and Consumer.

"GARLAND" Stoves and Ranges have never been victims of the auctioneer's hammer, but always command ready sale.

They are made of the best material, by experienced workmen, and are guaranteed to be the very best goods of their kind that can be manufactured for the price asked, which is no more than that of equal grades.

"GARLAND" Stoves and Ranges are the best known, most extensively advertised, and therefore easiest to market.



First Prize, Paris, 1900.

### The Michigan Stove Company

Largest Makers of Stoves and Ranges  
in the World

DETROIT

CHICAGO



First Prize, Buffalo, 1901.





## GOOD WILL

"UNION MADE"

# STEEL RANGES

Have all the latest improvements, such as Large Feed Door, Duplex Grates which can be removed without disturbing the linings or water front. Large Ash Pit Door and Deep Ash Pan, which is so arranged that it catches all the ashes. The Smoke Box is made of Cast Iron, which in itself is an important feature. The Fire Box Linings are sectional. The Ovens are thoroughly braced and the Bodies fully lined with Asbestos Millboard protected with an inner plate and are boiler riveted throughout.

We furnish the same style with Enameled Reservoir.

**Send for Catalog and Prices**

**Stock Complete. Prompt Shipments Guaranteed**

## F. A. KLAINE & CO.

MANUFACTURERS

"Good Will" and "Omaha"  
Stoves, Ranges, Repairs, Etc.

CINCINNATI, OHIO

## WROUGHT STEEL

# RANGES

LIKE THE

# "PACIFIC"

Are best because they're made stronger, better, more perfect than any other similar construction. You should write for prices and secure our Catalogue.

It is made with High Closet, Rolling Front, Six Holes, for Hard or Soft Coal; is the latest, best and handsomest Steel Range ever offered, one that you can offer as simply "out of sight" compared with that sold by the peddlers. Try it.

... THE ...

## JOHN VAN RANGE CO.,

Warerooms:—419 ELM ST.,

Factories:—6-8-10 and 12 HOME ST.,

CINCINNATI, O.







WITH Improved removable Duplex Grate, Improved Water Back for heating water, Flue Lined with Pure Asbestos Board, New Non-Warping Oven Bottoms, Cold-Handled Gravity Latch, Drop Oven and Feed Door, Patent Double Centers, Regulating Damper, Nickel-Plated Towel Rod.

Nickel Bands on doors are ventilated to prevent tarnishing, and body of Ranges is highly finished.

All bright parts Nickeled instead of Polished.

**GEM-MILLER RANGES**

The  
Wm. Miller  
Range & Furnace Co.

125 and 127 E. Fifth St.  
CINCINNATI, O.



## CITY BUCKEYE RANGE.

For Hard, Soft Coal,  
Wood or Coke.

MADE IN 17 AND 19 INCH OVEN.

Square Top and Bracket Reservoir  
Fitted with Water Heater.

AN ATTRACTIVE PIECE  
OF GOODS AND . . .

**A Ready Seller.**

Write for Descriptive Catalogue  
and Prices.

**OHIO STOVE CO.**

Portsmouth, Ohio.





# The Dangler Oil Heater, 1902

Height, 27 in.  
Weight, 10 lbs.  
None better.  
Made of polished  
Steel, with either  
Brass or Tin  
Tank.



Ornamental,  
Durable,  
Powerful and  
Simple in  
Operation.  
For sale by  
Jobbers and  
Dealers everywhere.

THE DANGLER STOVE & MFG. CO., CLEVELAND, OHIO, U. S. A.

# MONARCH

## TRIPLEX No. 63 GAS HEATER.

AN ORIGINAL AND POWERFUL HEATER  
AND A STRIKING BEAUTY.



Has three 6-inch Russia Iron Radiator pipes within which are located smaller tubes, each flattened at the lower end, forming the back walls of the burners, as shown through the mica windows.

The heated air passes up and around these tubes, heating also the current of air within, which is taken from the floor, discharging it through the open work nickeled top, making a strong combination and a handsome heater.

The Monarch Stove & Mfg. Co.,  
MANSFIELD, OHIO.

### AGENTS:

H. R. BRUCE & CO., 228 Main St., Cincinnati, O.  
A. L. CANFIELD, 284-6 Pearl St., New York.  
R. E. EDMONDS, 203 Wood St., Pittsburg, Pa.  
W. H. GRUENHAGEN, St. Anthony Park, Minn.





## 1903

# Reliable Oil Heaters

RELIABLE Oil Heaters have always been conceded Leaders. This season they are finer than ever. TO THE RELIABLE IS DUE THE CREDIT OF THE PERFECTION AND POPULARITY OF THE OIL HEATER TO-DAY. \* Our Gas Heater line is the largest and most complete. Write for catalogue and prices.

MADE BY

### THE SCHNEIDER & TRENKAMP CO.

CLEVELAND CHICAGO SAN FRANCISCO

SOLD EVERYWHERE



## ARTISTIC ENAMELED STEEL RANGES

*The only Enameled Ranges on the market to-day.* Are not to be confused with the Black Japan and so-called baked enameled ranges which will burn off and rust. Our Enamel being fused with the iron is guaranteed rust and fire proof.

*The Highest Grade of materials* only are used in the construction of our ranges and our Enameling Process is the only successful one.

An ornament to the kitchen and a delight to the housekeeper because so easily kept BRIGHT and CLEAN by use of soap and water, doing away with the objectionable stove polish.

An attractive line and ready sellers. Send now for Illustrated Catalogue.

### The St. Louis Enameling Company,

S. E. Cor. Ninth and Monroe Streets, ST. LOUIS, MISSOURI.

We do enameling of specialties and our line of Enameled Steel Signs cannot be excelled.

## About Fire Pots.

We formerly lined our fire pots with cast iron—then they cracked and warped. Now we use fire brick for lining and will guarantee it for five years. The lining is replaced through the fire door.

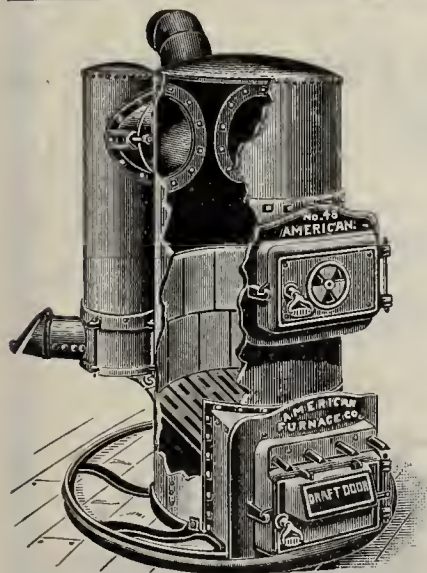
The **AMERICAN FURNACE** is made strong in places where other furnaces have proven weak; it is made of heavy steel and riveted tight like a boiler. Will burn any kind of fuel.

You can only build up a permanent furnace business by handling a first-class furnace. We manufacture for the better class of trade.

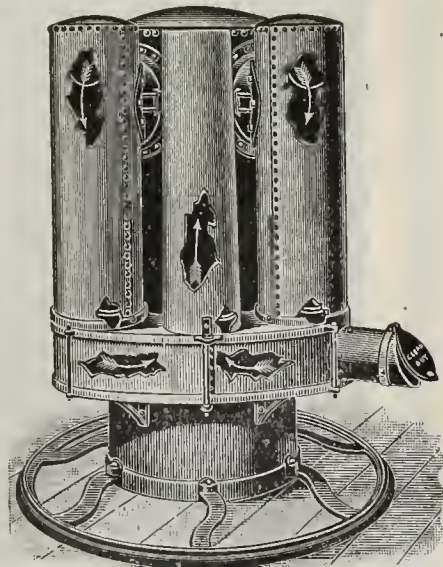
### The American Furnace Co.,

1911-13 PINE STREET,

ST. LOUIS, MO.



Burn Hard or Soft Coal or Coke. Large Doors.



Large Radiators, easy to clean out

Write for prices and secure the agency before the other fellow gets it.

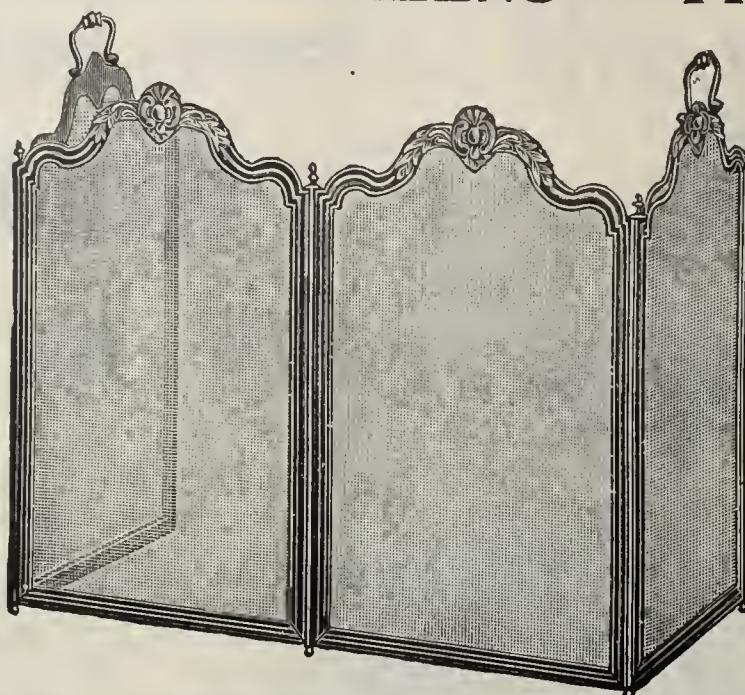


## FRENCH FOLDING SCREENS FOR FIRE PLACES

We are the only manufacturers of this line in the United States.

*Send for Our Prices  
Before Importing.*

Our screens are heavier, smoother finished, and generally better than the imported article.



Finished in pure brass, gilt, lacquer and Berlin black.

Screens made in the following heights: 18, 20, 26 and 30 inches.

A large variety of styles.

Send for catalogue of  
**Fire Place Goods**  
made of brass, wrought iron and cast iron.

**The S. M. HOWES CO.,** Manufacturers, 42-44-46 Union Street, BOSTON, MASS.

## Noxall Steel Cook



With or Without Reservoir.

For Wood or Coal.

Has Perfect Square Oven, with Aluminum Finish.

Made of the very best material and containing all the latest features in steel cook construction.

We also manufacture a full and complete line of high grade Air-Tight Heaters.

ASK FOR CATALOGUE.

**Quincy Foundry and Novelty Co.,**  
QUINCY, ILL.



## Natural Gas is Cheaper Than Coal,

Providing You Use the Proper Appliances.

We will send you our No. 36 Catalogue, showing over one hundred different designs of Gas Stoves and Ranges that are economical and efficient, for the asking.

**H. ADLER COMPANY,**  
Manufacturers of Acme Gas Stoves and Ranges,  
PITTSBURG, PA.



**THE H. B. SMITH CO.,**  
**WESTFIELD, MASS., U.S.A.**

Catalogue furnished only upon application to  
**Heating Contractors, Engineers and Architects**

92 Pages. Size 9 x 12 Inches.

**COTTAGE  
BOILERS.**

STEAM BOILERS (8 SIZES), 550 SQ. FT. RADIATION SUPPLIED.  
WATER BOILERS (8 SIZES), 900 SQ. FT. RADIATION SUPPLIED.

PACIFIC COAST AGENTS  
**HOLBROOK, MERRILL & STETSON,**  
SAN FRANCISCO, CAL.

EUROPEAN AGENTS  
**AUG. EGGERS,**  
BREMEN AND NEW YORK CITY.

SALESROOMS :

**THE H. B. SMITH CO.,**

**133 CENTRE STREET,**  
**NEW YORK.**

**510 ARCH STREET,**  
**PHILADELPHIA.**



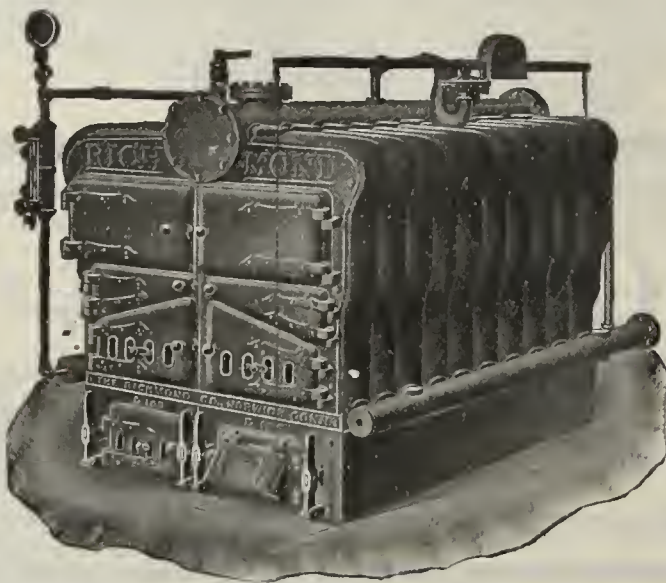
Why should you postpone another day  
informing yourself fully about the good  
points of . . . .



Series D-18



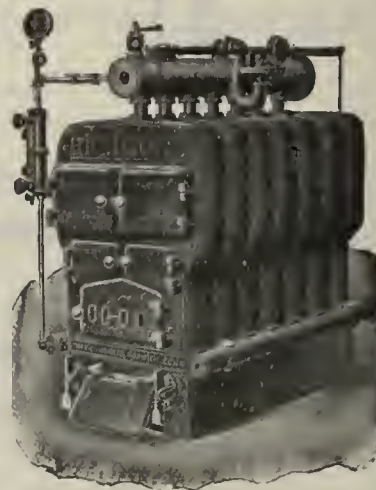
Series 418-427-B1



Series D-50



Series 518-527-X



Series D-21

# RICHMOND BOILERS

SEND FOR OUR NEW **1902** CATALOGUE. DON'T FORGET  
TO ASK FOR PRICES ALSO.

**THE RICHMOND COMPANY,** NORWICH,  
CONN.

NEW YORK,  
738 Park Row Bldg.

PHILADELPHIA,  
18-24 So. 7th St.

PITTSBURGH,  
210 Ferguson Bldg.

CHICAGO,  
Chicago Heater & Supply Co.

ST. LOUIS,  
Rumsey & Sikemeier Co.



# HIGH GRADE HEATERS.

**Some Dealers Look  
Is Made**

**Is Wiped Out**

to the profit they make on the sale of a single furnace, and if a cheap furnace is used the profit looks large when the contract

When this cheap furnace fails to heat, and gives out in the middle of winter, the dealer is obliged to alter and readjust the setting, secure repairs for his furnace, and in the end the entire profit

and great disgust follows to both the purchaser and the dealer.

**OTHER  
DEALERS  
INSIST**

on using

**Good MATERIALS  
WORKMANSHIP  
FURNACES.**

The result of such choice is satisfactory heating, pleasant feelings between the purchaser and the dealer, and the

**WARMEST  
RECOMMENDATION**

of the furnace and the dealer.

**A GOOD BUSINESS  
REPUTATION**

is obtained, and when good work is wanted this dealer is sought out and fair prices paid for his work.



**The Basis**

of all heating is a

**Good  
Furnace,**

one that is **SIMPLE** in operation, **ECONOMICAL** in fuel and **LONG-LIVED** without the need of repairs.

The furnace shown here has all these merits, and the actual use of

**Many Thousands**

of these heaters has demonstrated its superiority.

**FURNACE  
DEALERS**

who are trying to establish a

## *Good Furnace Business*

should place themselves in communication with us, obtain our catalogue, see the line of heaters we make and get in position to do business on a good basis for the balance of the year 1902.

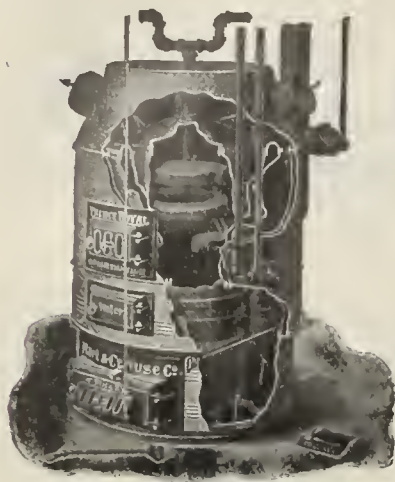
**Our Prices**

are reasonable, and our treatment of our customers is

**More Reasonable.**

**GIBLIN & CO., Utica, N. Y.**





# Royal Heaters.

**HART & CROUSE CO.,**

235 Water St., 78 Lafayette St., 79 Lake St.,  
New York. UTICA, N. Y. Chicago.

The Leading Line of Heating Apparatus.

**HOT WATER,  
STEAM,  
HOT AIR.**



See how the



1900

# BENGAL



1901

Has Grown.

We will tell you more  
about this down-to-date

**FURNACE**

in our Free Booklet.

*Will you send for one?*



1902

**FLOYD, WELLS & CO., Royersford, Pa.**

NEW YORK OFFICE, 210 WATER ST., R. W. HILLMAN, Manager.

Eastern Selling Agents:

**GURNEY & CO.,**

Washington, Hanover and Elm Streets, Boston, Mass.

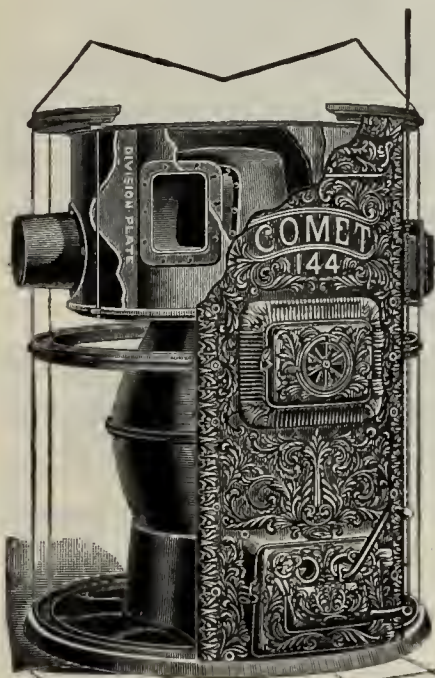


# THE STAMFORD FOUNDRY COMPANY

THE OLDEST STOVE FOUNDRY IN AMERICA

SINCE 1830 MAKERS OF CELEBRATED

## FURNACES, RANGES AND STOVES

THOUSANDS IN USE 1000 IN A SINGLE CITY  
RECORD EVERYWHERE ESTABLISHED*References to Some of Our Furnaces, Now and Through  
Past 25 Years in Continuous Service*

COMET Heavy Steel Drum

Both furnaces are well made—all exposed parts heavy. *A generation or constant service establishes their record for durability, economy, powerful heating, easy to set, simple to operate.*

The radiator of the STAMFORD ALL CAST FURNACE is a combined dome-tubular and cylinder construction of immense capacity and heating power.

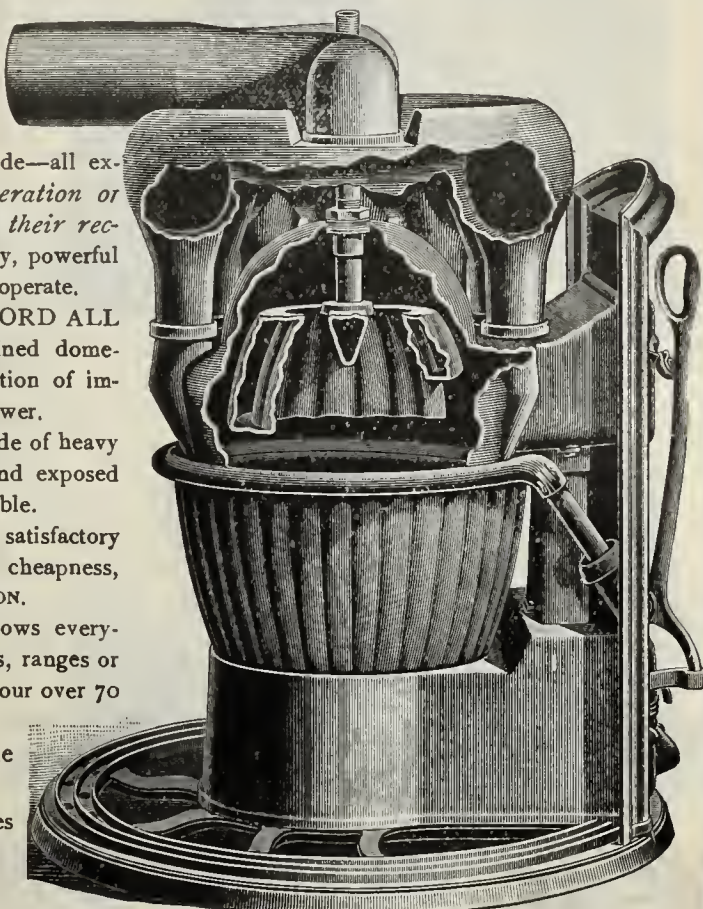
The COMET radiator is made of heavy cold rolled steel. Fire pot and exposed parts especially heavy and durable.

The COMET is made for satisfactory service and not for PRESENT cheapness, ENDING IN EARLY DESTRUCTION.

OUR GUARANTEE follows everything we make, whether stoves, ranges or furnaces, and is established by our over 70 years' record.

Also an elegant and new line of OAK STOVES

Send for Catalogue, Capacities and Prices



STAMFORD COMBINATION HEATER

HOT AIR AND HOT WATER OR HOT AIR ONLY, AS ORDERED

The above cut shows interior form of water section, giving an idea of its great heating surface and consequent power.

THE STAMFORD FOUNDRY COMPANY  
STAMFORD, CONN.

IF YOU ARE NOT SELLING THE

### Peck-Williamson Underfeed Furnace

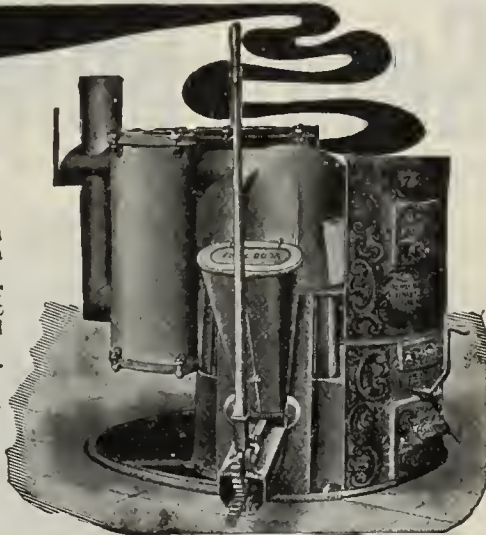
you have not the trade and are not making the money you might. Just a pull or two of the lever feeds the new coal from underneath.

The Underfeed Furnace consumes less fuel than any other furnace ever built. The coal is burnt more slowly. All the heat units from it, as well as from the smoke, are utilized and all smoke eliminated.

Our handsome booklet explains its splendid heating qualities and coal saving.

You may have this booklet and our special plans for selling. Ask for booklet about our Laundry Dryer also.

THE PECK-WILLIAMSON COMPANY,  
CINCINNATI, OHIO.



### WEIR ALL STEEL GAS AND SOOT CONSUMING FURNACE.

THE HEAVIEST STEEL FURNACE MADE.

Absolutely gas and dust tight. A great heat-producer but a fuel saver.

MANUFACTURED BY

THE MEYER FURNACE CO.,

1300-1304 S. Washington St.,

SEND FOR CATALOGUE.

PEORIA, ILLS.

### "The Handy Furnace Pipe."

MADE WITH A VIEW OF BEING SAFE.

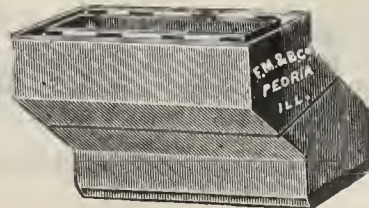
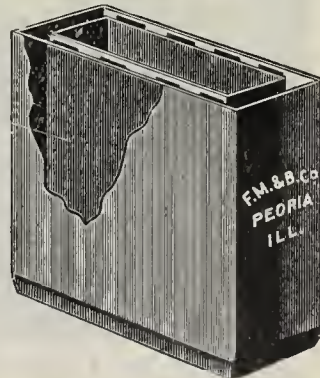
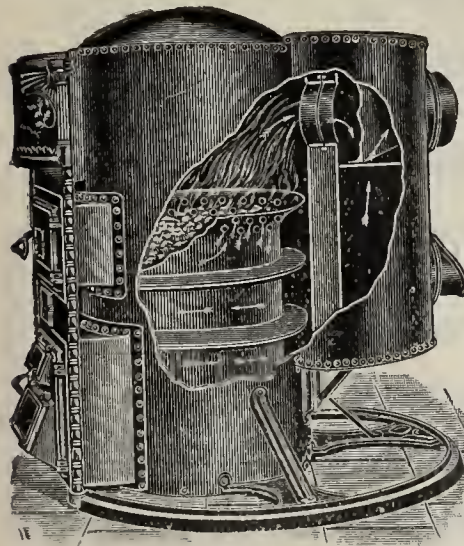
The saving of labor in putting it up really makes it the cheapest hot air pipe on the market.

MANUFACTURED BY

F. MEYER &amp; BRO. CO.,

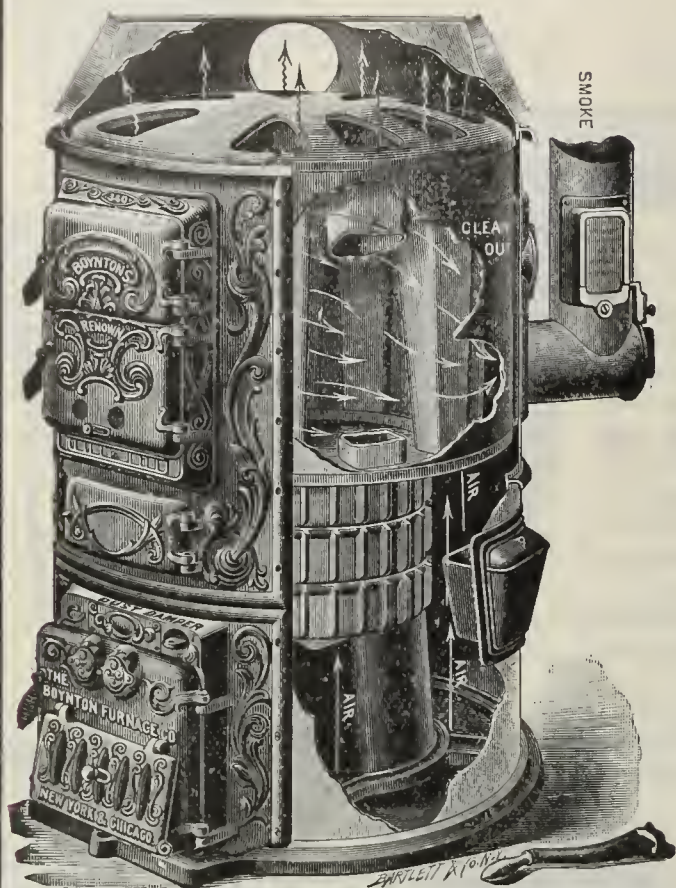
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PEORIA ILLS.





# BOYNTON'S "RENOWN" PORTABLE FURNACE

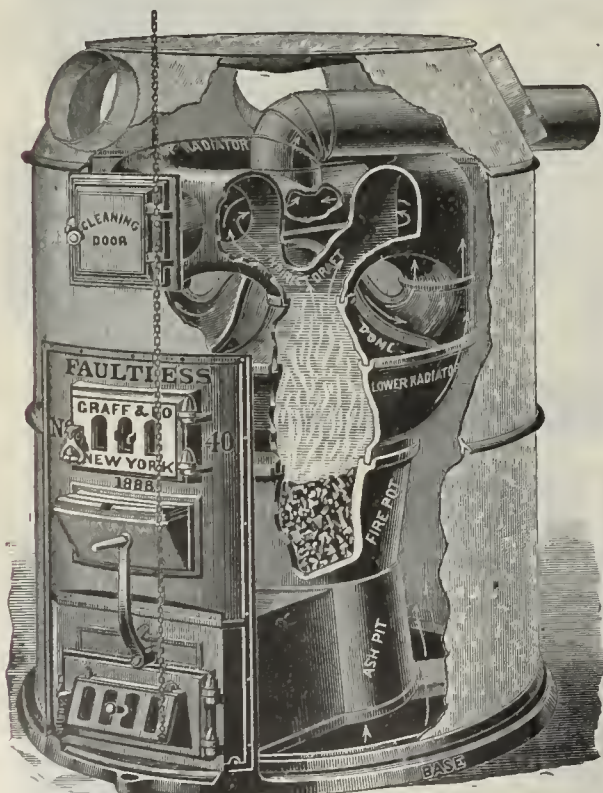


A NEW and distinct type of construction thoroughly tried and tested. Possessing more area of heating surface to area of grate surface than any other furnace manufactured.

Notice construction of cast iron heating flues, each one directly over and in contact with fire. Can we mail you catalogue and prices?

The **BOYNTON FURNACE CO.,**  
NEW YORK. CHICAGO.

## Good, Better and Best Furnaces,



FAULTLESS Furnaces.

is the correct order of things in selecting a line to handle.

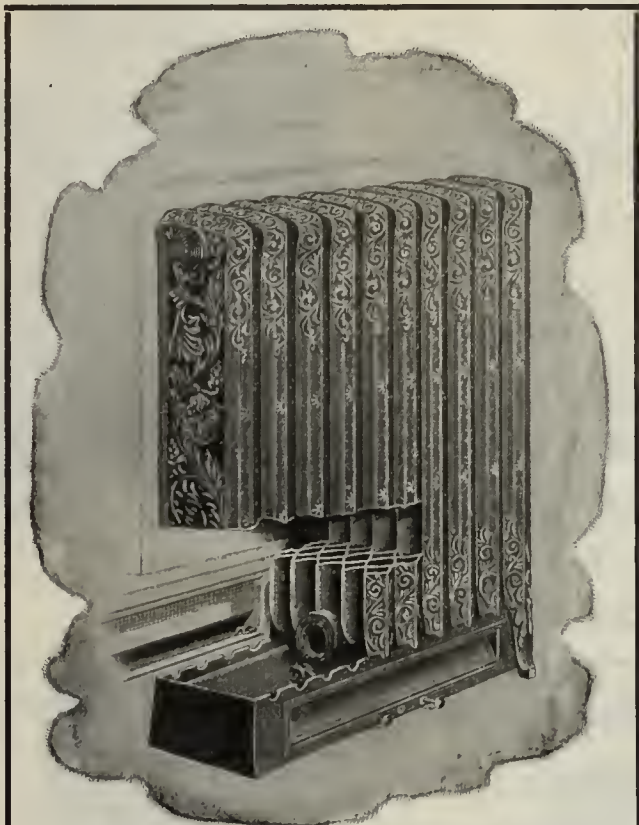
We make none worse than *Good*, and none better than the *Best*!

We can suit you as to both *quality* and *price*.

If you are in the market why not look into our goods and ascertain what we have to offer you?

The **Graff Furnace Co.,** Manufacturers,  
208 Water Street, New York.





Zenith Flue Box Base Radiator.

## OUR ZENITH PATTERNS OF RADIATORS

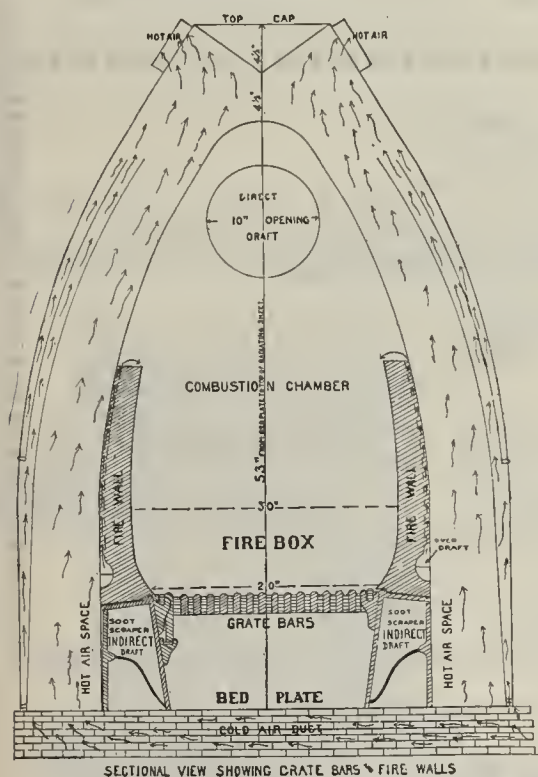
are used in Park Row Building, New York; Stock Exchange, Hotel Touraine, Hotel Marie Antoinette, Bank of New York, St. James Building, Barnard College New Buildings, D. O. Mills' Hotels Nos. 1 and 2, W. W. Astor Apartment Building, all of New York City; Forts Hancock and Wadsworth; P. O. Building, Washington, D. C.; Union Station, Pittsburgh; Broad Street Station and Arcade Building, at Philadelphia, etc., etc, etc. These Radiators may therefore be said to have secured the endorsement of a large number of the most prominent heating engineers in the United States.

Send for New 1902 Catalog.

**AMERICAN RADIATOR COMPANY**

Lake and Dearborn Streets, CHICAGO.

New York. Boston. Philadelphia. Buffalo. St. Louis. Minneapolis. Denver.



WRITE FOR CATALOG.

## The "Radiating" or "Crown" Sheet

of the STANTON is made of the best quality of Fire Box Steel several times as thick as steel radiators in other warm air furnaces, and is so constructed that expansion and contraction have no effect on any joint. Fire does not come in contact with any joint or seam in the entire construction.

KEEP YOUR EYE ON THIS SPACE.

**THE STANTON HEATER CO.,**

MARTIN'S FERRY, OHIO.

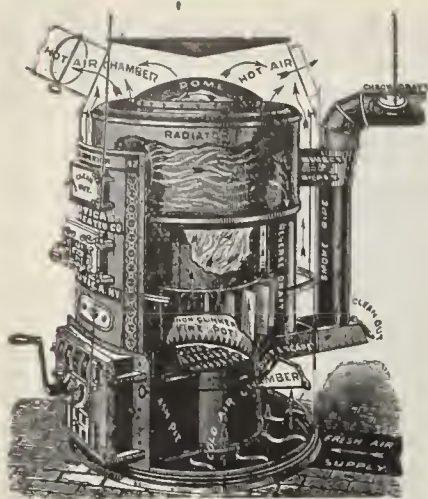
REFRIGERATORS,  
BLUE FLAME OIL STOVES,  
GASOLINE STOVES.

LARGEST JOBBERS  
in  
NEW ENGLAND.

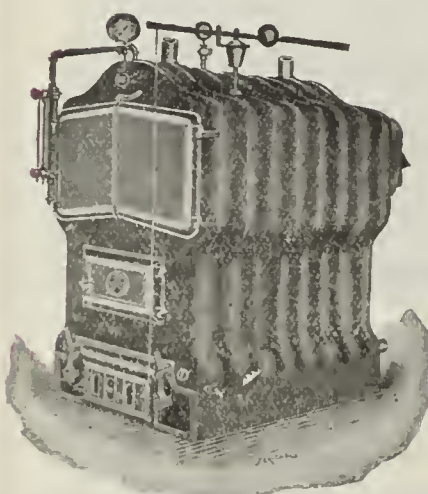
GAS RANGES,  
FURNACES, STOVES,  
RANGES AND REPAIRS.

**HENRY N. CLARK CO.,** 56 and 58 UNION ST., **Boston, Mass.**





SUPERIOR FURNACE.



IMPERIAL BOILER.

## WRITE FOR

New Furnace Catalogue,  
Portfolio of Boiler Views,  
Discounts, sure to interest you.  
Full information as to Exclusive  
Agencies.

**WE ARE NOT  
THE LARGEST  
MAKERS OF HEATING  
APPARATUS IN THE  
WORLD, BUT WE  
MAKE THE BEST, AND  
OUR LINE INCLUDES  
EVERY REQUIREMENT  
OF THE FURNACE  
AND BOILER TRADE.**

Manufactured by

**Utica Heater Co.**

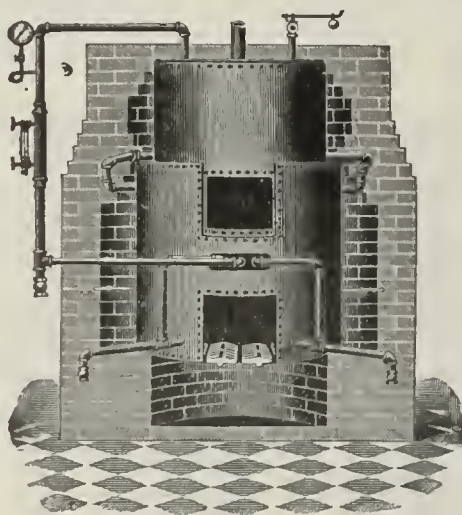
UTICA, N. Y.,

NEW YORK:  
108 Beekman St.BOSTON:  
24 India Square.CHICAGO:  
33 Dearborn St.

UTICA HEATER.



KEYSTONE BOILER.



**THE  
HAXTON**

**A Steel Brick-Set Boiler for Steam and Water  
Heating—Hard or Soft Coal.**

HAS AN ESTABLISHED REPUTATION.

SOLD ON MERIT.

PRICES TO THE TRADE ONLY.

**KEWANEE BOILER COMPANY**

Chicago Store, 169 E. Lake St.

KEWANEE, ILL.

Eastern Representatives:

MODEL HEATING CO.,  
Philadelphia, Pa.  
New York, N. Y.  
Buffalo, N. Y.  
Boston, Mass.

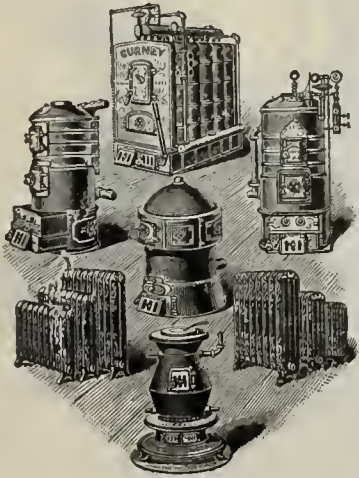


**WINCHESTER  
HEATER.**

Scott said of Napoleon that no one could claim with better right to be a sovereign among soldiers. Without wishing to steal his powder, we might say the same of the "WINCHESTER" Heater. Its success lies in the fact that it accomplishes what it was built to do, viz: make heat. Smith & Thayer Company, Boston, Mass.; 105 Beekman St., New York.







## Prove Our Assertions

The force of an argument lies in its application. We argue all the time that

## **"GURNEY" HEATERS**

400 SERIES, DORIC and BRIGHT IDEA

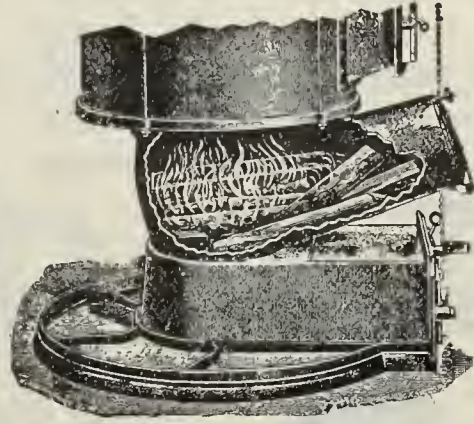
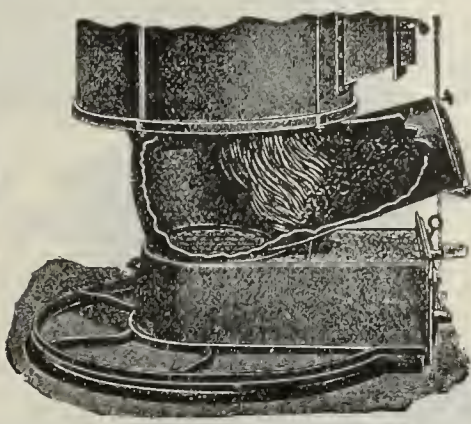
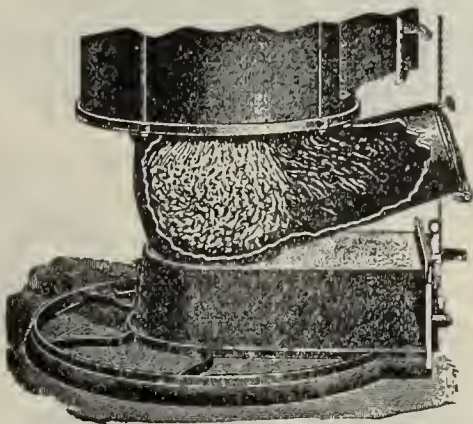
are the best selling heaters in existence. And the fact is having constant application at the hands of our agents. Ask any one of them what kind of reception the Heater receives. Find out whether its extra long wear, its extreme economy in fuel consumption and the ease and simplicity of its operation influences its sale. Then when you've satisfied yourself as to the force of our argument, write for full particulars concerning an agency—for you certainly couldn't make a more profitable business connection.

## **GURNEY HEATER MFG. CO.,**

Branch, 111 Fifth Ave., NEW YORK CITY.

74 Franklin St., BOSTON.

Western Selling Agents, JAMES B. GLOW & SONS, 358 Franklin St., Chicago, Ills.



## **THREE PRACTICAL USES**

to which the *Combination* Fire Bowl and *Coking Magazine* used on the **PATRIC FURNACE** may be put.

The first cut shows soft coal undergoing coking process in magazine, with coked coal in main bowl. *A great fuel saver.* Second cut illustrates fire carried only in magazine, for light Spring and Fall heating, *a great convenience.* Third illustration shows furnace used for wood. *A success for twenty years.*

SEND FOR NEW ILLUSTRATED CATALOGUE.

**THE PATRIC FURNACE CO., = Springfield, Ohio.**

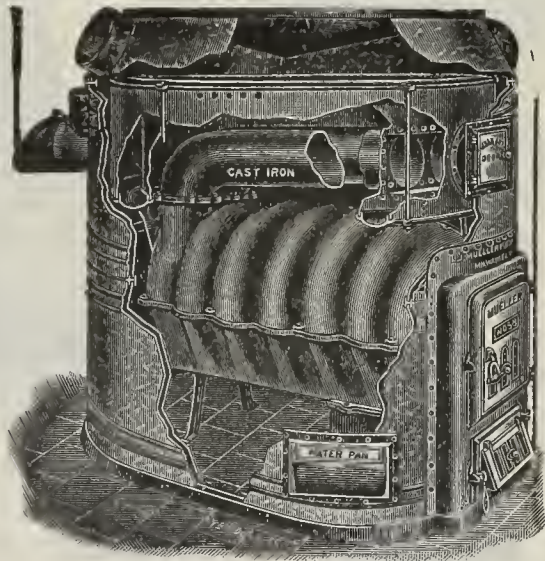


For Wood or Coal.

## **FOR WOOD OR COAL** THE **MUELLER** LARGE DOOR FURNACE IS A **DANDY.**

We Make All Styles of Heaters  
For all Kinds of Fuel.

Write for Catalogue and Prices.



For Long Wood.

**EVERYTHING IN THE HEATING LINE.**

ESTABLISHED 1857.

## **L. J. MUELLER FURNACE CO.,**

190 REED STREET,

MILWAUKEE, WIS.





**Red Cloud—Globe.**  
Justly Celebrated.  
Extensively Sold.

# THE UNION STOVE WORKS,

70 Beekman & 66 and 68 Gold Sts.,  
NEW YORK, U. S. A.

**Prosperity Perches High !**  
Many manufacturers are short of stoves!  
The strike will be settled and coal be plentiful  
in ample time, at a moderate price.

"The future holds no store of grief,  
And hope has not forsook it,  
For if you pay the price of beef  
You'll get the coal to cook it."



**Dash Heavy Sugar  
Loaf Stove.**

Five Sizes. 2, 3, 4 5 f.

**Timid dealers who de-  
lay ordering this year  
are liable to get left.**  
The stoves illustrated  
on this page will burn  
any fuel; even the Self-  
feeders make good wood  
burners by lifting out the  
magazines.



**Station Agent.**

Nos. 20, 22 and 24.

Great Rail Road Stove used  
in many stations of the largest  
Rail Roads. Powerful Heater.



**THE ASTOR GEM.**—New Idea ! New Class !

Ornamental Globe in four sizes, 35, 45, 55, 65. With or with-  
out magazine. Full Nickered or Plain. For Stores, Offices, Ele-  
vated and Surface Rail Road Stations, Saloons, Restaurants,  
Club Rooms, Hotels, Chapels, Lecture Rooms, Lodge Rooms,  
Sitting and Reception Rooms.

**Write for Samples. Send for Full Catalogue.**

Six distinct types of Cylinder Stoves and 63  
varieties in all.

**Cook Stoves, Ranges, Furnaces, Gas Ranges, &c.**

The greatest variety of heaters  
in the world :

**OAKS, GLOBES,  
CYLINDERS, OIL  
STOVES, GAS RADI-  
ATORS, everything.**

These illustrations are just a few  
selections from our immense lines.



**Astor Oak.**

Nos. 411, 413, 415, 417, 419.

Sales this year unprecedented.



**Golden Rod—Self-  
Feed.**

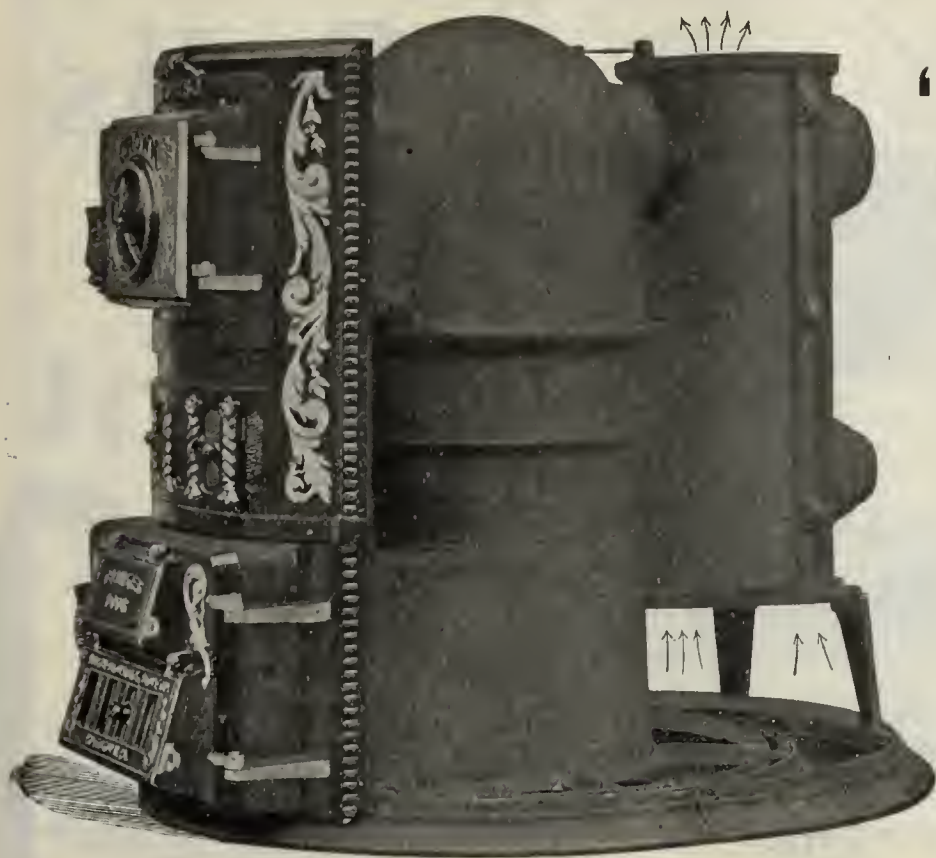
Nos. 14, 16, 18, 20, D. D.  
22, 24, 26, R. F.



**Angler—Cylinder.**

6 Sizes, with or without R. F.





## THE CROWN "LOW DOWN" FURNACE

Competes with Steam and Hot Water Heating.

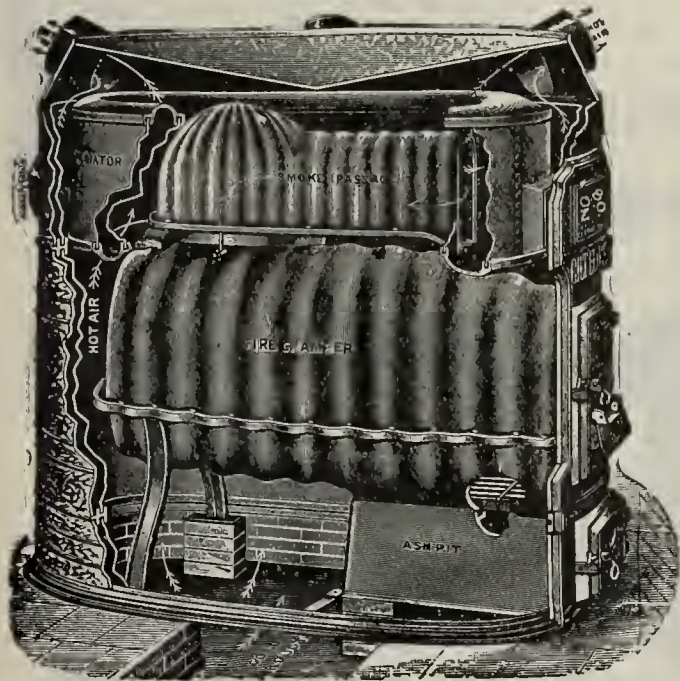
- 1st—In heating at long distance.  
2nd—In an economical consumption of fuel.

OUR CROWN LOW DOWN FURNACE IS  
**SUPERIOR TO STEAM AND HOT WATER.**

- 1st—In its simplicity of management, any ordinary help can manage this furnace.  
2d—In its economy of repairs, repairs being only needed at long intervals, the skilled mechanic not required to repair this furnace.  
3d—*Most important of all* is the purity of air supplied. It's the ideal sanitary house heating construction. Any one caring for the good health and comfort of the home should not fail to examine this furnace before installing any other system of heating.

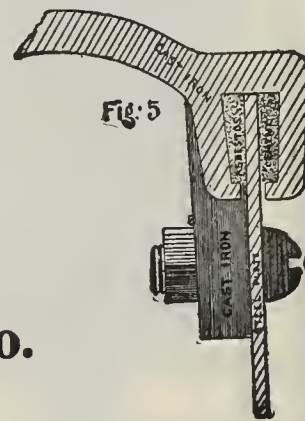
**March-Brownback Stove Co.**  
POTTSTOWN, PA.

# GILT EDGE



stands for best when applied to furnaces. The many dealers who have installed and the thousands of householders whose homes have been heated by our furnaces show they like the Gilt Edge, as will be seen by the testimonials they have written. Let us send you a few of them.

The Keystone Joint used in Gilt Edge Furnaces is the only permanent gas tight steel and cast iron joint on the market.



**R. J. Schwab & Sons Co.**  
MILWAUKEE.



## Emperor Furnaces FOR WOOD.

Simple, Safe, Durable. Economical in Fuel.

The Best and Cheapest Line of Wood Furnaces. . . .  
Furnished for either Brick or Galvanized Iron Casing

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*Bergstrom Bros. Co.*

NEENAH, WIS.



# GLENDALE

**Stoves and  
Ranges**



Manufactured by  
**SOMERSET STOVE FOUNDRY CO.,**  
Send for a Sample. **SOMERSET, MASS.**

**THE  
B. C. Bibb  
Stove Company,  
BALTIMORE, MD.**

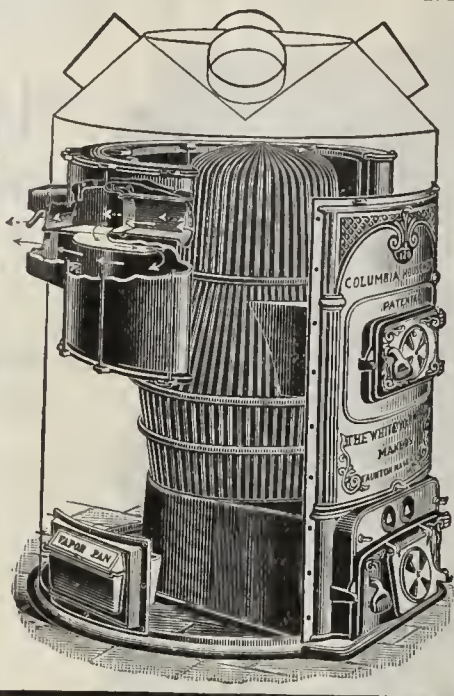


**RANGES, FURNACES,  
FIRE PLACE HEATERS,  
Stoves of Every Description,  
HOLLOW WARE, ETC.**

Write for our New Catalogue.

— JUST AS THEY KISSED GOOD-BY.—  
Mrs. Crawford: "My husband has become  
very hard to please."

Mrs. Crabshaw: "It is a good thing for  
you, my dear, that he was not always that  
way."—*Town Topics.*



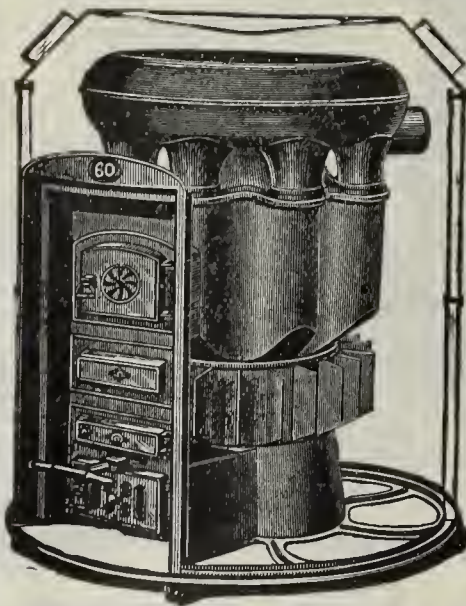
# Sells on Sight

Just show the  
Columbia House-  
hold to any one  
who wants a really  
good furnace at a  
low price—tell them  
the cost and you'll  
make a sale on the  
spot.

## THE COLUMBIA HOUSEHOLD

is not a cheap furnace—but the best low price cast  
pot furnace built to-day. You'll say so when you see  
it. Write for catalog.

**WHITE, WARNER CO., Taunton, Mass.**



Why Buy the  
**CHEAPEST**

When You Can Get the

**BEST**

Almost as

**CHEAP?**

**WE SELL THE BEST.**

**UZAL CORY & CO.,**  
210 Water St., New York.

Established 1847.

## SOFT COAL IS CHEAP FUEL

especially if properly burned  
in the right kind of a furnace.

## CANTON PERFECT BLAST FURNACES

Were BORN and BROUGHT UP in a SOFT COAL DISTRICT.

Write for facts and prices.

**THE BONNOT COMPANY, - Canton, O.**





## Monarch Air Blast Furnaces.

All Cast Iron.  
For Hard and Soft Coal.

Send for 1902  
Catalog and discounts.

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81 Elm Street,  
CLEVELAND, OHIO.

Gray Iron Castings to order. High grade only.

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### BOILERS and RADIATORS

for Steam and Water Heating.



Pierce Improved Florida Steam Boiler.  
LARGE HEATING CAPACITY.  
ECONOMIC IN FUEL CONSUMPTION.

Endorsed by the foremost Architects  
and Heating Engineers.

Write for New Illustrated Catalogue.

**Pierce, Butler & Pierce Mfg. Co.,**  
Syracuse, N. Y.  
New York. Boston. Philadelphia.



## Brien Heater.

A perfect, all cast WOOD or COAL burner. There is no other Hot Air Furnace as low down as the "BRIEN."

Write for territory, catalog and prices.

**BRIEN HEATER CO.,**  
HOOSICK FALLS, N. Y.



## Portable OVENS

FOR  
CORE BAKING,  
JAPANNING,  
ENAMELLING, Etc.

OVENS FOR Bakers, Confectioners, Hotels, Etc.

Made in all sizes, single and double, for coal, wood, natural or artificial gas.

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## ROBBIN HOT WATER HEATER.

For heating dwellings and other buildings; also for greenhouse heating.

**SAVES FUEL,**  
and is a success in every way.

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MEDINA, N. Y.



## The Champion Hot Water Combination Heaters.

They Fit Any Furnace.

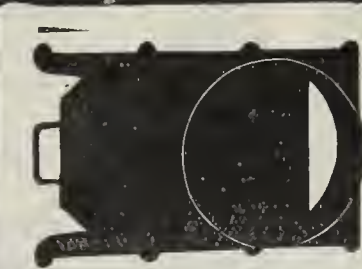


Base section when used without ring sections

Ring Section

These Heaters are made in five sizes diameter, and from 100 to 700 square feet radiation capacity. Will heat those cold rooms or an addition to the building. Will increase the capacity of any furnace. Are cheaper than coils and will do more work. Write for new circular. Manufactured by

**FRANK D. STOLZ,**  
115 Lake St., Chicago, Ill.



## "ABC" Blast Gates

PIONEER MANUFACTURERS.

Our products have always borne the highest reputation.

are Simple and Effective for closing pipes in exhaust, blast and heating systems. Send for price list.

**American Blower Co.,**  
DETROIT, MICH.

New York. Chicago. London.



Height over all,  
4 ft. 3 inches.



## The FORBES FURNACE.

You run no risk in putting in the  
**Forbes Furnace.**

When properly installed we guarantee them in every case.

They are constructed entirely of cast iron.

No sheet iron drums.

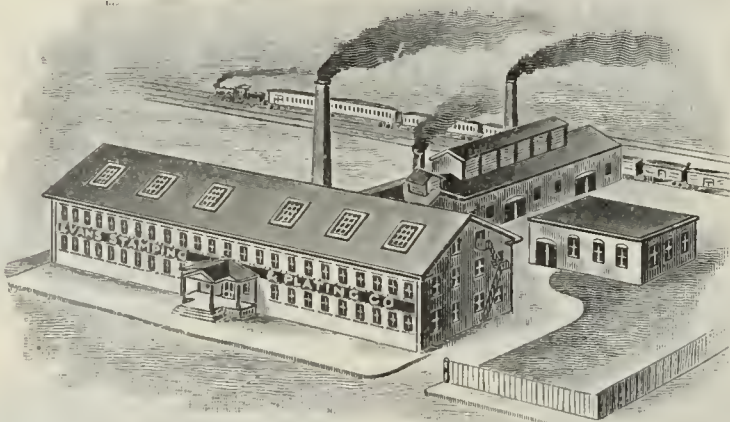
Our radiating tubes are  $\frac{3}{8}$  in. thick, and will wear for years.

Specially suited for low cellars.

SEND FOR CATALOGUE AND FULL PARTICULARS.

**Tubular Heating & Ventilating Co.,**  
228 Quarry St., Philadelphia, Pa.

This is the place where the "ACME"



OVEN THERMOMETER is manufactured.

TAUNTON, Aug., 1902.

MR. MANUFACTURER.

Dear Sir:—

Make your stoves complete by using the "ACME" OVEN THERMOMETER. It is reliable and price is reasonable. Write us for circular.

Respectfully,

**EVANS STAMPING AND PLATING CO.,**  
TAUNTON, MASS.

C. H. MATTHEWS, Detroit, Mich. (Western Agent).

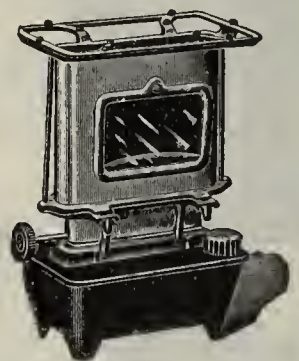
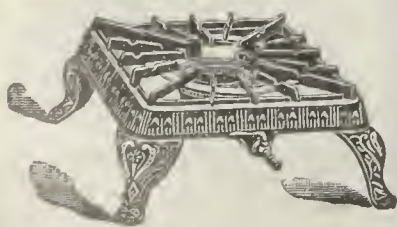
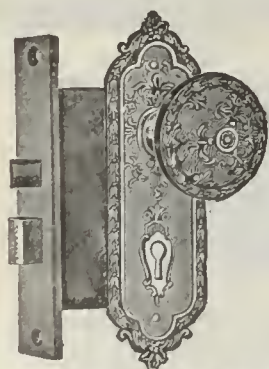
## THE TAYLOR & BOGGIS FOUNDRY CO.,

MANUFACTURERS OF

Light Gray Iron Castings, Builders' Hardware.

Dampers, Damper Clips, Oil and Gas Stoves, Furnace Lamps, Molasses Gates, Letter Boxes, Hardware Specialties.

**CLEVELAND, O.**

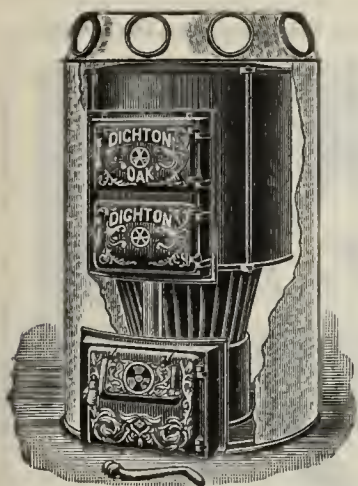




# THE "Dighton Oak" Furnace

## Dimensions and List Prices:

| No. of Furnace. | Diameter of Fire Pot. | Height of Castings. | Diameter of Casings. | List Price of Castings. | List Price of Casings. | List Price of Wood Grates. |
|-----------------|-----------------------|---------------------|----------------------|-------------------------|------------------------|----------------------------|
| 190             | 20 inches             | 51 inches           | 36 inches            | \$ 48 00                | \$ 8 00                | \$1 68                     |
| 210             | 22 "                  | 53 "                | 39 "                 | 56 00                   | 9 00                   | 2 08                       |
| 230             | 24 "                  | 51 "                | 42 "                 | 68 00                   | 11 50                  | 3 36                       |
| 250             | 26 "                  | 53 "                | 46 "                 | 78 00                   | 14 00                  | 4 17                       |
| 282             | 29 "                  | 60 "                | 52 "                 | 110 00                  | 17 00                  | 6 67                       |
| 310             | 31 "                  | 62 "                | 52 "                 | 135 00                  | 17 00                  | 7 50                       |



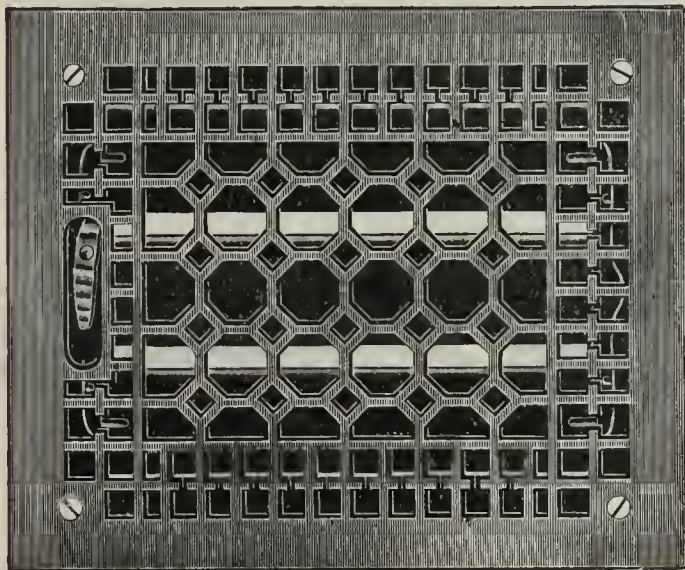
The "DIGHTON OAK" is made especially for burning wood, but is as well suited for coal, coke or gas for fuel. The general type of construction is exactly the same as the regular "DIGHTON" which has become so well-known as a durable and economical heater. The outside measurements, flue construction and flue measurements are the same; the large double feed doors allow of taking in large chunks of wood or a 4-foot stick cut once.

The wood grate is not fastened to the fire pot or coal grates; it rests upon the triangular grate bars, and by easily turning these bars the fire is thoroughly cleaned.

If at any time it may be desirable to use coal instead of wood as fuel, this grate can be removed in a minute's time through the feed door and set aside until such time as you wish to change to burning wood again.

**DIGHTON FURNACE CO., Taunton, Mass.**

## OUR SQUARE AND CONVEX REGISTERS WILL INTEREST YOU.



WRITE US  
FOR  
PRICES.  
—  
YOU WILL  
FIND THEM  
RIGHT.

**The FANNER MFG. CO.**  
CLEVELAND, O.

## I Will Give the Public the Benefit.

Having completed patterns for my 1902 line, I will close out my last year's pattern of the celebrated

**400 LB. WILLARD STEEL RANGE for \$15.00.**

*This is Less than 4c. per pound.*

They have six 8 inch lids. Oven, 17 x 21 x 12. Top Cooking Surface, 30 x 36. Large Warming Closet. 15 gallon Reservoir. Duplex Grate. Burns Wood or Coal. Lined throughout with asbestos.

**EVERY ONE GUARANTEED. BUY NOW AND SAVE 100%.**  
Write for Free Descriptive Circular and Testimonials.  
"FIRST COME—FIRST SERVED."

**WM. G. WILLARD,**

619-621 N. 4th St., - - - St. Louis, Mo.

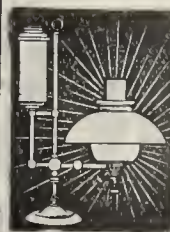


**HEATING BY COMBINATION STOVES AND FURNACES.**

Suitable for Large or Small Houses, Stores, Conservatories, Barber Shops, Hotels, etc., etc.

Heat Water Quickly.  
Circulation is Positive.  
No Joints Inside to Leak.

**THE NATIONAL  
PIPE BENDING CO**  
160 RIVER ST., NEW HAVEN, CONN.



## THE "BEST" LIGHT

is a portable, 100 candle power light, costing only 2cts per week. Makes and burns its own gas. Brighter than electricity or acetylene, and cheaper than kerosene. No Dirt. No Grease. No Odor. Over 100 styles. Lighted instantly with a match. Every lamp warranted.

Agents Wanted Everywhere.

**THE BEST LIGHT CO.,**  
207 E. 5th St., Canton, Ohio.





## Put Your Finger

Perpendicularly over the chimney of a lighted lamp and then across the top of the chimney and see which will burn your finger most.

## New Era Radiators

are placed directly over the heat current that passes up the center of a stove or furnace pipe. As a heat saver and distributor of hot air they are unapproached by any device ever invented. A practical test will convince both you and your customers.

Send for our inducements to handle these radiators now. The season is just approaching when you can sell large numbers of them.

**WILMOT CASTLE & CO., 76 Elm St., Rochester, N. Y.**



## MOTT'S UTILITY RADIATORS.

ONE MAN'S OPINION.

"Like them, why certainly I do. They please me in every way—lighten my work, lessen my expense, and win the approval of my patrons. Under the circumstances I think this is good policy, don't you?"

This steamfitter voices the opinion of many. Agencies granted to established firms if territory is uncovered. Write to-day for catalogue and full particulars.

**The J. L. Mott Iron Works,**

HEATING DEPT.,

84-90 Beekman St., New York, N. Y.



**FURNACES**

**EXCELSIOR HEATING SPECIALTIES**

**PIPE**



### Furnace Dealers

will find in the Excelsior Line  
*Everything Needed*  
in installing Hot Air Furnaces.

|                                       |                                                             |                                     |
|---------------------------------------|-------------------------------------------------------------|-------------------------------------|
| Furnaces,<br>Furnace Pipe,<br>Cement, | Stationary Elbows,<br>Adjustable Elbows,<br>Asbestos Paper, | Registers,<br>Dampers,<br>Supplies. |
|---------------------------------------|-------------------------------------------------------------|-------------------------------------|

Large Stocks, Reasonable Prices, Prompt Shipments.  
Catalogs on application.



**EXCELSIOR IDEAL ELBOW**

**ELBOWS**

**EXCELSIOR STEEL FURNACE CO.**  
38-40 W. MONROE ST.-CHICAGO.

**REGISTERS**

# BRAND STOVE CO.

**STOVES, RANGES and FURNACES.**

SEND FOR CATALOG.

**MILWAUKEE, WIS.**

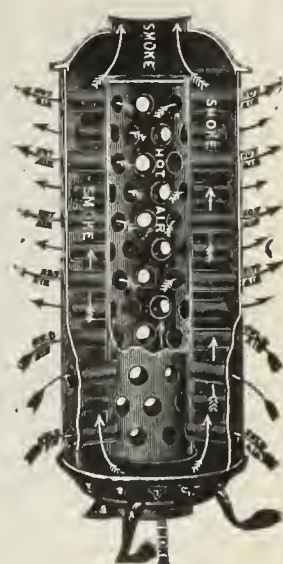




A Tea-Kettle Boils Quicker on my Chimney than on my Stove.

## IS IT SO?

It is said that a tea-kettle will boil quickest on top of a chimney. However that may be, all agree that there is too much heat wasted there. Nothing but the cross tube **ROCHESTER RADIATOR** has ever trapped it. If you were to heat a poker, would you hold it at the side of the flame or over the top? Or would you cook food on the side of a cook-stove in preference to the top? It is thus with the **ROCHESTER RADIATOR**, which takes the heat from the top of the current and not from the side. The cross tubes cool the hot current, just as you would blow across a cup of tea to cool it, only there are from 96 to 120 such currents in operation.



4,866 sq. ins.

## ROCHESTER RADIATOR CO.,

100 Furnace St., ROCHESTER, N. Y.

**A** N IDEAL Wall Register (closed) may cost a little more than a hole in the floor. It may cost you a little less. **IT IS THE BEST** Uni-

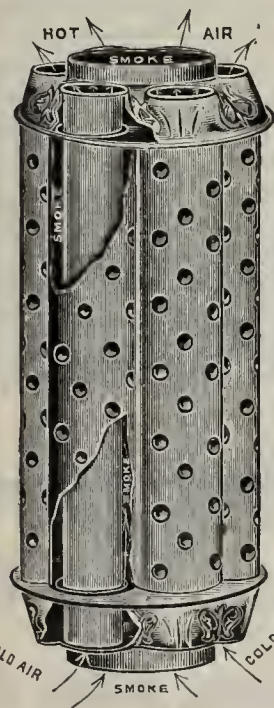
versal Side Wall Register. Used on all widths of pipe and by live dealers to their advantage.

All Sizes and Finishes.  
Lowest Prices.  
Prompt Shipments.



First Floor Open, No. 9, 10 or 12.

IDEAL REGISTER CO. 129-131 West Woodbridge St., Detroit, Mich.



**A** TOMS of heat make degrees of temperature in a house. Every degree of temperature conserved by the utilization of heretofore wasted heat means added weight to the side of economy on the balance of expenses. The cause which produces these effects is the **COLUMBIA RADIATOR**.

A radiator which utilizes the most heat, which is neat and compact and which is so constructed as to be most easily cleaned, is sure to prove the quickest, readiest seller. We call your attention to the vertical system of tubes in the **COLUMBIA** which assures direct radiation, even distribution of heat and added facilities for ventilation, and which also assures the simplest, easiest method of cleaning.

We solicit your correspondence, knowing that offering you as we do a superior article at a price which places us in a class alone, when you place your order the **COLUMBIA** will command your attention. We do not offer an untried article, but one which has stood the test and proven itself a marketable product.

ENTERPRISE FOUNDRY CO., - - Rochester, N. Y.

**H. & C.**

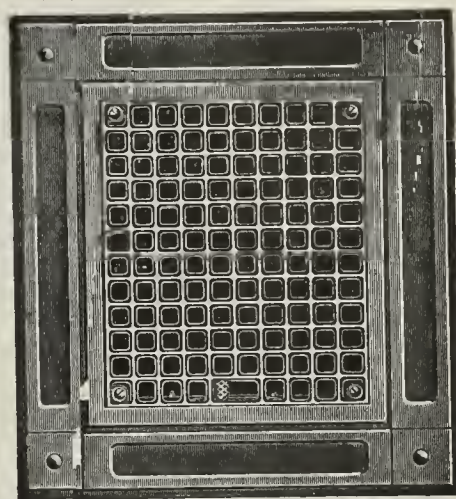
Wrought  
Steel

## REGISTERS

...and...

## VENTILATORS.

**STRONG, LIGHT,  
HANDSOME in SIM-  
PLICITY of DESIGN.**



**FURNISHED WITH  
WROUGHT STEEL  
or WROUGHT BRASS  
FACE PLATES, AND  
IN ALL FINISHES.**

Manufactured by

**The HART & COOLEY CO.,**  
New Britain, Conn.

GENERAL SALES AGENTS.

**STANLEY WORKS,**  
New Britain, Conn.

79 Chambers St., New York.  
19 Lake St., Chicago.



# Furnace Heating.

A Practical and Comprehensive Treatise on Warming Buildings with Hot Air, by William G. Snow, with an Appendix on Furnace Fittings. 170 pages; size, 6 x 9 inches. Cloth bound. Price, \$1.50.

This is the only book that has been brought out which presents a systematic and reliable treatment of the warm air furnace system of heating.

It deals with the various types of furnaces, their construction, proper location and setting, together with furnace fittings, and all matters pertaining to the installation of furnaces and to effective and economical heating by warm air. The subject is discussed for the first time by a competent author possessed of a scientific education and a practical training, who presents positive rules, based on a long experience, for guidance in designing furnace systems for dwellings and other buildings where this popular method is employed. The various details of furnace work are described simply and at such length that the volume will be valuable to all who are in any way interested in the subject. It is recommended to practical furnacemen, to architects, builders and house owners, and to tinnerns and plumbers in suburban sections who do furnace work. To all these it will prove a reliable text-book and guide.

## PARTIAL SUMMARY OF CONTENTS BY CHAPTERS.

**Chapter I.—Furnaces**—Is devoted to Furnace Construction—The Relative Proportion of Furnace Parts—Secondary Heating Surface—Economy and Efficiency—Heating Capacity and Exposed Wall Surface—Manufacturers' Ratings of Their Own Productions, etc.

**Chapter II.—House Heating**—Compares Furnaces and other apparatus, and describes Method of Setting Brick and Portable Furnaces—Location and Area of Cold Air Supply—Cold Air Rooms and Air Filters—Return Ducts and Air Circulation—Size of Hot Air Pipes—Location of Registers, etc.

**Chapter III.—The Combination System**—Discusses Heating Distant Rooms with Radiators—Balancing the System—Location of Water Heater in Furnace—Capacity of Water Heaters—Size of Radiators, etc.

**Chapter IV.—Air**—Deals with the Necessity of Ventilation—Water Needed to Moisten Air—Expansion of Air—Velocity of Air in Tubes, etc.

**Chapter V.—Heating and Ventilation of Buildings**—Considers the Size of Furnaces Required—Fresh Air Room and Supply—Air Circulation—Size of Flues—Use of Stack Heaters—Size of Heating Coils in Vent Flues, etc.

**Chapter VI.—Heating of Public Buildings Churches and Stores**—Is given to the Size of Furnaces Required—Grate Surface in Ventilated Buildings—Air Supply—Size of Heating and Ventilating Flues—Size of Stack Heater, etc.

**Chapter VII.—Fan-Furnace Combination System**—Is devoted to Positive Warm Currents from Fan Systems—Location of Fan and Driving Apparatus—How Good Furnaces are Aided by Fans—Types and Efficiency of Fans—Area of Ducts and Flues, etc.

**Chapter VIII.—Temperature Control.**

**Chapter IX.—Estimate and Contract Blanks.**

**Chapter X.—Value of Fuels.** The Proper Size for Furnace Chimneys—with tables.

## APPENDIX.

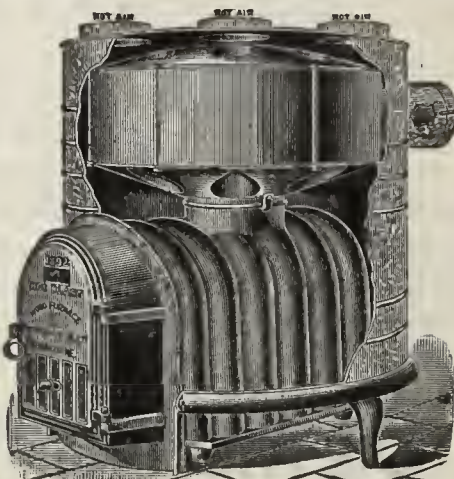
**Furnace Fittings**—A section of 45 pages dealing with the Making of Furnace Casings—Metal Cold Air Boxes—Making Furnace Bonnets and Collars—Making Pipe and Elbows—Register Boxes and Stack Shoes, etc.

SENT, POSTPAID, ON RECEIPT OF PRICE, \$1.50

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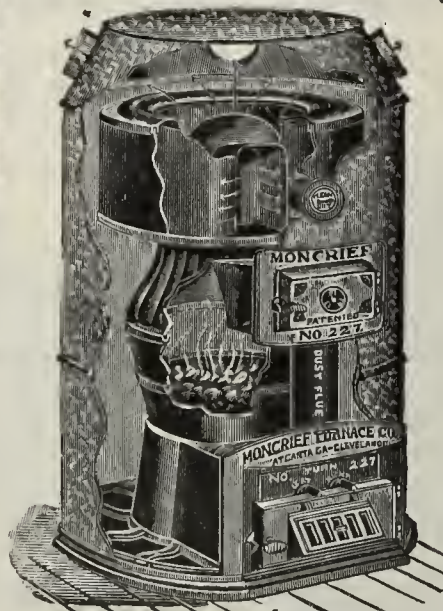
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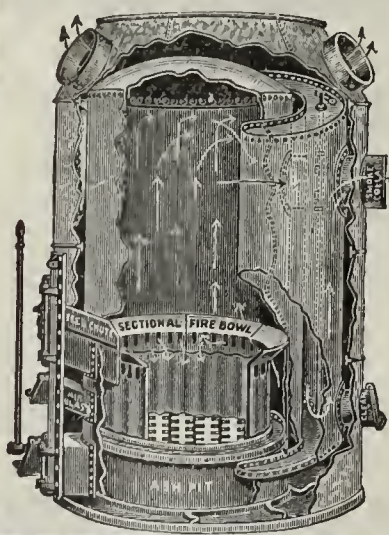
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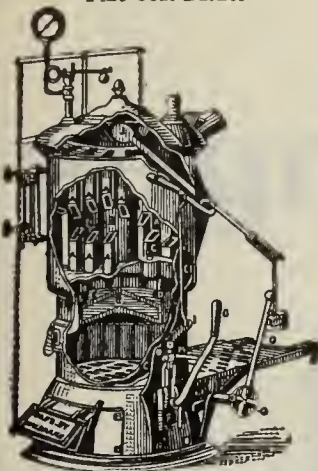
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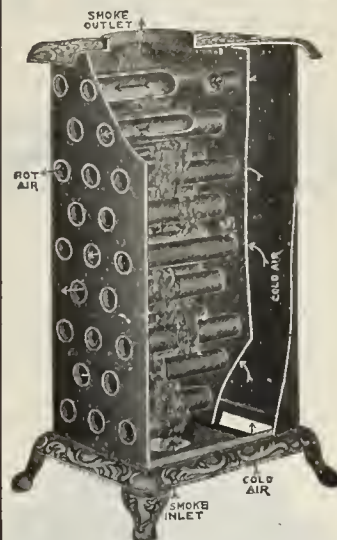
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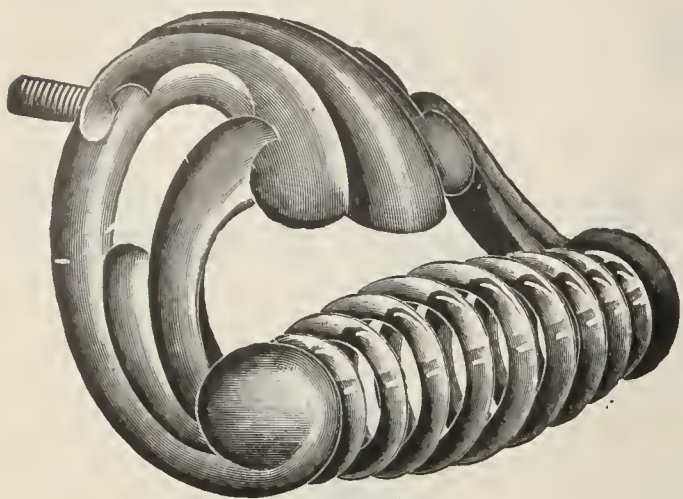
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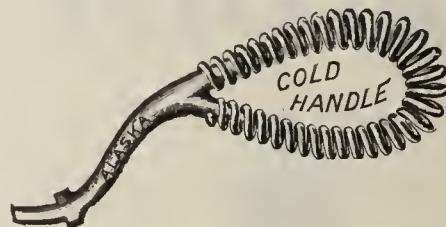
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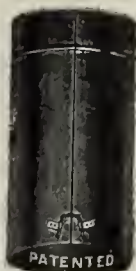


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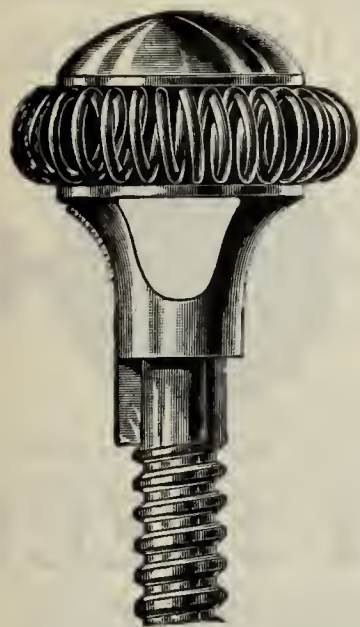
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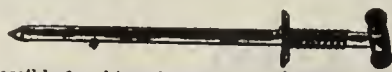
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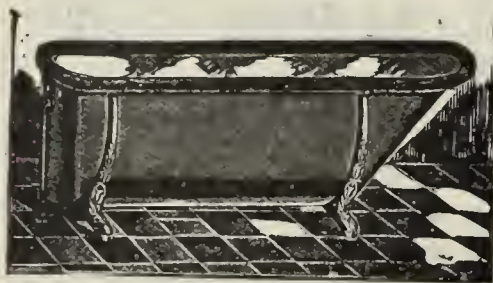
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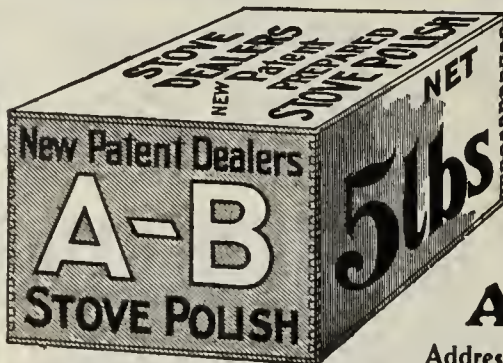


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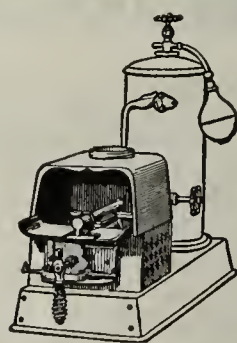


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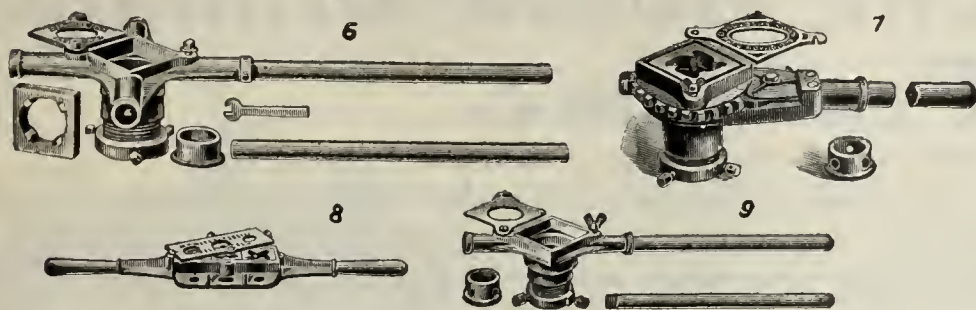
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Why Traps should be Vented.

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Warming churches.

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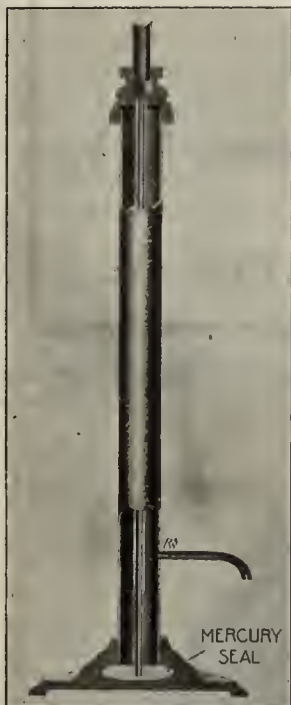
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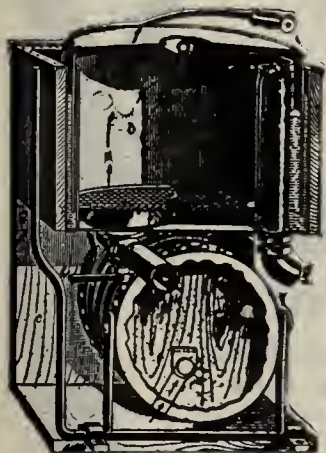
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NEW YORK AND CHICAGO.

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Volume LVIII.....No. 12  
Index to Reading Matter.....Page 71

## Soft Coal for Heaters.

Owing to the scarcity of hard coal through the miners' strike many who have no knowledge of the peculiarities of soft coal will this winter be called upon to use some one of the various grades of bituminous coal in the furnace or boiler. The dealers are already being cross questioned not only by their customers but by many who happen to pass their shops as to whether soft coal can be satisfactorily used in their heating apparatus or as to the cost of making the necessary change so that soft coal can be used. In another column a correspondent presents a series of pertinent questions with special reference to the apparatus he has been selling, and undoubtedly many others will be interested in the information that may be elicited on each point raised. These questions afford an opportunity for those who are in a soft coal section to render substantial assistance to their brethren in hard coal districts by describing in detail what they find is necessary in their every day practice. No great effort will be needed to give information that will aid an immense number of their fellow countrymen, for it is only necessary to describe fully and simply what they have been doing for years in a matter with which they are thoroughly familiar. We hope that the tender of our columns for the presentation of such information and instruction will be accepted and that *The Metal Worker* may have another opportunity to prove its value as a medium for communication on subjects of vital interest to tradesmen in different sections. The present condition of the fuel question in the East would seem to afford an opportunity for those manufacturers who for years have been making heating apparatus specially adapted for soft coal burning to bring to the attention of Eastern buyers the goods that have proved satisfactory in the home of soft coals of all kinds. The Eastern manufacturer has gone West with his plant to extend his trade and the present peculiar situation may afford to the Western manufacturer the opportunity to come East with his soft coal goods and possibly repeat the success of the invasion of the East by the oak stove.

## Plumbers' Combination.

It has become quite fashionable of late among newspapers in various parts of the country to give voice to charges that association plumbers are combining for the oppression of some of their *confrères* in the trade. Through the master plumbers' associations a considerable proportion of the trade are organized and united for the purpose of securing the protection of their interests, which is undoubtedly a legitimate action. That in some instances the temptation to use this combined

influence in a manner that has been disagreeable to those who have felt it is probably true. But it is doubtful if the power has been used for this purpose to any greater extent in this than in other branches of trade. Investigation of the cause of the outcry which has been taken up by the newspapers will almost invariably lead to the conclusion that the work done by the master plumbers in various sections has not resulted otherwise than for the public good. The boards of health throughout the country are old institutions, and they were doing an excellent work before the plumbing trade assumed the importance that it now enjoys. There can be no doubt, however, that the plumbers at the present time are not only sustaining the efforts of these boards to preserve the public health, but have brought sanitary work to a higher perfection than would have been possible without their assistance. The best plumbing regulations that have ever been produced by the boards of healths have been due directly to the master plumbers' associations, and these regulations have been widely adopted. The regulations, however, were found insufficient to secure the desired object, and the plumbing inspector has been the outcome. Where the plumbing inspector has held to the strict enforcement of the regulations no hardship has come to those master plumbers who are thoroughly masters of the business, and who make a practice of doing the best work they know how. Plumbers in all parts of the country who take out a license to work under such regulations have been constantly annoyed by incompetent and unlicensed plumbers working in competition with them. Wherever a master plumbers' association takes steps to remove these demoralizing factors from the field the cry of oppression is raised. These offenders, however, are entitled to no sympathy. Their work is in many instances a menace to the health of the occupants of a building, and it is generally worth much less than is paid for it. Moreover, the bids made by these incompetent men have the effect of making the general public dissatisfied with the reasonable charges of competent men for good work done in compliance with the regulations. While the methods sometimes adopted to get rid of these offenders are rather drastic, and, viewed apart from the surrounding conditions, may seem to the uninformed a hardship to the plumbers who complain, the object should not be lost sight of. This object is the same as one of the first principles of our government, "the greatest good of the greatest number," consequently the method of accomplishing it should receive commendation rather than censure.

## Oil Fuel.

The high price and growing shortage of hard coal, caused by the prolonged strike in the Pennsylvania anthracite regions, are directing increased attention to the oil fields of the country as presenting a probable solution of the fuel problem should the famine point in anthracite be approached. Crude oil is being successfully used for fuel purposes in the place of coal in many directions. It is employed in locomotives and for the generation of steam in stationary boilers, while a steam vessel has recently made a trip across the Pacific Ocean, using oil as fuel. In view of these facts it is not strange that the public should be eagerly investigating the adaptability of oil as a domestic fuel in place



of the expensive and scarce anthracite. Inventors in many parts of the country are busily engaged in the effort to develop oil burning apparatus that can be used effectively and economically with hot air furnaces, house heating boilers and domestic heaters, as well as in kitchen stoves and ranges. A number of devices of this character have lately appeared on the market, and it is likely that this winter will see a wide experimental use of oil as a domestic fuel in the East, where the anthracite shortage is most keenly felt, as well as in the districts adjacent to the various oil fields. The fact that oil can be produced much more cheaply than coal, combined with its greater convenience and economy of handling, together with the absence of the ash and dirt inseparable from the use of coal, either hard or soft, tells heavily with the public in favor of oil and stimulates the desire to obtain appliances for using the liquid fuel for household purposes. Undoubtedly means will be found before long to make such a substitution generally possible.

The future of oil in this country seems to be very bright. The area of oil production is steadily expanding. Each week we read of the discovery and development of new oil wells in widely scattered sections, so that it begins to look as though the oil area of the United States was fully as large as the coal area, great as the latter is. The cost of producing oil once a well is struck is far less than that of mining an equivalent amount of coal, and with the provision of effective and economical apparatus for burning it oil should be a cheaper fuel by any standard of comparison. The economic importance of these facts can hardly be exaggerated. That oil in the future will be a successful competitor of coal for practically all purposes in which the solid fuel is now employed seems to be a foregone conclusion.

### Central Plants for Public Buildings.

A work that eventually will prove a substantial benefit to the general public is being done by the heating engineers throughout the country, in the recommendation of the use of a central heating plant wherever municipal and county buildings are so located in a city that substantial economy can be effected thereby. The authorities at Binghamton, N. Y., are considering the erection of a central heating and lighting plant for both the city and county buildings, these buildings being so located that a considerable advantage would be gained by locating in one building all the boilers and the machinery needed for producing the heat and light for supplying the different buildings grouped around it. A combination heating and lighting plant makes an economical system, particularly where but one set of employees is required to take charge of such a plant for both the city and county buildings, as it insures a saving on the payroll. Moreover, the plan will undoubtedly effect a saving in fuel. The matter of determining the proportionate expense which two different bodies should bear is one that can readily be calculated by the engineers, and should not be an obstacle to securing the economy which such a central heating and lighting station would insure. Another advantage that should not be overlooked is the isolation in a separate building of all the noise, dust, and dirt producing apparatus, so that the other buildings are free from such annoyance. This is not a new proposition, but it seems to be receiving more general consideration, which affords evidence that the heating engineer is an accepted authority in his special field. Wherever progress and economy in cost of plant, labor, fuel and maintenance go hand in hand those who guide the movement are public benefactors.

### The American School of Correspondence.

No doubt there are many young men, as well as older men already in business, who are glad to have the opportunity of taking up technical studies at home with the assistance of an educational institution, especially if their work would count toward a degree when followed by a year or two of study at a resident school. This opportunity is about to be offered by the American School of Correspondence, heretofore located at Boston, Mass. The management of the school announce that they have made arrangements with the Armour Institute of Technology for the American School of Correspondence to be located in future on the Armour Institute premises in Chicago. Furthermore, a considerable number of the faculty of the Armour Institute will become actively associated in the instruction of the students of the American School. Dr. Gunsaulus, president of the Armour Institute, who is the chairman of the Advisory Board of the American School of Correspondence, is described as enthusiastic over the educational possibilities of the work, and it is at his invitation that the change has been made. President Gunsaulus believes that the American School system offers a means of bringing college influence to the masses such as no other form of education has ever offered. In fact, it is university extension work in every sense of the word.

Those young men who are too poor to give up four years to obtain a training and degree at a resident school can now considerably shorten their resident work by correspondence instruction, as the examination of the pupils of the correspondence school will count toward a degree at the Armour Institute. They will also be admitted to classes there on the subjects on which they have passed by correspondence. Furthermore, the management of the school will make a systematic effort to assist its students to procure positions in Chicago or vicinity, thereby enabling them to attend the excellent night schools at the Armour Institute, where all the advantages of laboratory and practical shop work are provided.

The American School of Correspondence will in no way lose its identity by the change of location. It remains a separate institution under its own management, but with the full co-operation and help of the president and faculty of the Armour Institute of Technology. In making this change the management state that they intend to use every effort to raise the standard of correspondence instruction to such a degree of excellence that their examination credits will be accepted by other schools besides the Armour Institute. They purpose to make their diploma stand for thorough work in the eyes of manufacturers and people employing trained technical help.

Last week's conflagration at the Spindle Top oil field, in the Beaumont district of Texas, suggests a possible very serious danger. It is reported that the fire was caused by carelessness, a man having gone into a tank of oil with a lighted lamp, which caused an explosion, the blazing oil spreading over a tract of 10 acres, burning derricks and tanks and igniting the oil in the latter, with the result of serious loss. More than once the Baku oil fields of Southern Russia have been the scene of violent conflagrations, with great destruction of life and property. It is to be hoped, therefore, that precautions will be taken in the Beaumont and other oil fields to provide so far as possible against the occurrence of any such catastrophe in this country.

At a recent session of the Trades Union Congress in London a resolution favoring the establishment of a Government arbitration court in Great Britain was rejected by a three to one majority. Many of the delegates opposed the resolution on the ground that under such a system of compulsory arbitration as was proposed the unions would not only lose many of the advantages they had wrung from their employers, but would die of inanition, since the need of their survival would no longer exist.



## STOVE PRICES ADVANCE IN NEW YORK MARKET.

For some time the feeling has been strengthening among the stove manufacturers marketing their product in New York that the prices ruling were too low, notwithstanding the independent advances made by different houses. This feeling prompted correspondence which led to a call for a meeting of the manufacturers interested, which was held at the Astor House, New York, on Thursday afternoon. The meeting was a comparatively short one, as the discussion developed a unanimous opinion that all stoves should be advanced in price. This idea was finally presented in a motion to advance the prices of all stoves 5 per cent., to take effect at once, which was unanimously agreed to.

The manufacturers are to be congratulated upon their action, which is undoubtedly justifiable under the prevailing conditions. It is doubtful if it will cause any trouble to the dealers, who should accept the advance as a notice to mark up their stock in hand accordingly. So far, the trade this year has been of large proportions, and if all concerned derive some increase in profit from the action taken the business of the year will have a more satisfactory outcome.

## THE CAHOONE ANTI-SMOKE STOVES.

The Pittsburgh Stove & Range Company, Pittsburgh, Pa., have recently begun the manufacture of stoves and ranges for burning soft coal under the Cahoon patent. The method of construction secures perfect combustion of the fuel, thus preventing the emission of smoke. In appearance these stoves and ranges resemble those of almost any standard line, their exterior furnishing no evidence of their peculiar merits, but the ingenious construction of the fire boxes makes them differ decidedly from all others heretofore placed on the market. In the words of an experienced stove man who has thoroughly tested these stoves, "the whole fire box of the range is hot blast and grate surface," with not a dead inch of space anywhere, even in the top, all gas generated being consumed. The heating stove is of the coal air tight type, round in shape, and is a self feeder. The claim is made that it will generate as much heat from 2 tons of bituminous coal as is usually obtained from 3 tons of anthracite. Great economy in fuel is thus secured, which is due to the utilization of all the gases in producing heat.

The following statement relative to the adaptation of the Cahoon stove to the use of lignite has been given us: "Last week one of these ranges was placed in the hands of a man to fire with lignite. He had never before seen the range, nor even a piece of lignite, and he was given no instructions. The results which he produced cannot be equaled with anthracite coal or any other solid fuel in any other fuel box. There was no smoke, no odor, no soot and no waste. It was a perfect fire."

Demonstrations of the special features of these stoves are now being given throughout the Northwest, and the orders being taken are regarded by the Pittsburgh Stove & Range Company as proving that the claims of the inventor are based on genuine merit.

## Death of Henry A. Richardson.

Henry A. Richardson, the founder of the Richardson & Boynton Company of New York and Chicago, died at his residence, Poughkeepsie, N. Y., on Monday, September 16, in the eighty-fourth year of his age. Mr. Richardson had taken no active interest in the affairs of the concern for a number of years, but had lived the quiet and peaceful life of a country gentleman. His particular delight was in horses and to his outdoor life with them and early good habits is due the vigorous health he enjoyed up to within a week of his death. Mr. Richardson and the late N. A. Boynton were shopmates and

practical men, and they became partners before 1850 in the business which was the nucleus of the present concern, which is still so prominent in the trade. The firm were formerly located on Broadway when that thoroughfare seemed to demand such a business. Afterward they removed to Canal street and finally to Water street, where the business increased to its present important proportions.

Mr. Richardson was highly esteemed by all his employees and friends, both in business and social circles, for his many good qualities and particularly for his affection for his old employees. He leaves a widow and three sons, Henry T., Dwight S. and A. P. Richardson. The funeral services were held at his residence on Wednesday and the interment was at Greenwood.

## Death of Otis H. Burtis.

Otis H. Burtis, one of the best known business men of Troy, N. Y., who for many years was prominently identified with the stove industry in that city, died from heart trouble on September 10 at his residence, 36 Ferry street, Troy. Mr. Burtis had not been in the best of health for some time, but the news of his death came as a shock to his large circle of friends. Mr. Burtis was one of the pioneers of the Troy stove industry. When that city was the center of the business he acted for many years as the chief traveling salesman for the old firm of Swett, Quinby & Perry. Later he entered into partnership in the stove making business with Herbert R. Mann. Subsequently Mr. Mann retired and Mr. Burtis associated with himself his son, H. L. Burtis, under the firm name of Burtis & Co. With this concern he was connected up to the time of his death. Mr. Burtis was of a kindly nature and made many friends. He was also an energetic, upright and well informed business man. He was born in Salem 58 years ago and had resided in Troy about 30 years. Mr. Burtis is survived by a widow, two daughters and two sons. He was a member of the Masonic order and also an Odd Fellow.

## The Channon-Emery Stove Company.

The annual stove catalogue and price-list which has just been issued by the Channon-Emery Stove Company, Quincy, Ill., is a neatly printed volume of 164 pages bound in muslin paper covers with side title consisting of a *fac-simile* of the company's trade-mark. The volume, which is known as catalogue No. 30, presents in great variety the leading lines of Never Fail stoves, ranges and heaters which the company manufacture. The place of honor is given to the steel range bearing the name Never Fail, which is intended for using soft coal, hard coal or wood as a fuel. It embodies the latest features of construction, is ornamented in an attractive manner and is offered both as a four-hole and six-hole range and in the usual modifications. Following this is the Crown Never Fail steel range, an entirely new construction, up to date in all respects. The Advance Never Fail is another new pattern which the company have brought out, embodying features of construction and ornamentation which cannot fail to command the attention of the wide awake dealer. A steel range which is intended for using wood exclusively is offered under the name of Kitchen Never Fail.

Among the cook stoves are found various lines offered under the same names as those which apply to the ranges already mentioned. In the way of all cast goods there is the usual assortment, some of the patterns being new for this season. The list includes a long line of cooks intended for burning wood exclusively. These goods occupy the bulk of the catalogue, the remaining portion being given up to the presentation of heaters, the Cheerful Oak being first considered. This is the company's leading stove in this line and is offered in an attractive dress in which nickel plays a prominent part. Other goods include the Cheerful Hot Blast, the Woodbine, a line of Cheerful air tights, the Rival, a neat box stove, together with an assortment of globe, cannou and laundry stoves. The catalogue concludes with a list of hollow ware and an alphabetically arranged index.



### Michigan Stove Company's Labor Day Display.

We present herewith a picture of the display made in the Labor Day parade at Detroit, Mich., on September 1 by the Michigan Stove Company. This display formed a part of the eighth division of the parade, under the leadership of Marshal John Shea, which was made up of floats prepared by the different business concerns of the city. The float of the Michigan Stove Company was conceded to be one of the most effective in the parade. It was drawn by four horses, and upon the vehicle, which was brightly ornamented with flags and bore on its top the well-known Garland trade-mark of the concern, were members of Iron Molders' Union No. 31, who with a small furnace showed how the Garland stoves and ranges are made. But instead of stoves, the product of the furnace on this occasion consisted of a quantity of medals, on which were inscribed "Labor Day 1902, Michigan Stove Works." These medals were distributed to the crowd. The wheels of the vehicle were

Anthracite or hard coal is so called for a good reason. It is more solid, more compact than bituminous. The latter is loose. It absorbs air and water. The flame from anthracite coal is from 2 to 3 inches long—that of soft coal is several inches longer. We know that the flame is the visible union of the carbon and oxygen, and that the products of the combustion of the gases generated go along up the flue.

In the case of the big soft coal flame, that also carries with it the soot and carbon besides the gases. Consequently plenty of room is necessary. Soft coal won't burn satisfactorily in a deep pit, which is the feature of our stoves here. It requires a large shallow fire, and the stoves used out West are built especially to meet these requirements. Besides, our stoves all have small fire boxes, while large, shallow fire boxes, large flues and shallow pits are the distinguishing features of the soft coal stoves.

If the New York housewife starts in to use soft coal it will simply mean discomfort and misery from the very start. Small rooms will be choked up with smoke, and nothing in the house will remain clean. She will have to feed her fire oftener, and the work of cleaning out the flues and range will be something awful. Nor



Michigan Stove Company's Labor Day Display.

hidden by a covering on which were the words, "Molders of Garland Stoves and Ranges."

### Hard Coal Stoves Not Adapted for Soft Coal.

The possibility of the coal strike extending into the autumn months, or even into the winter, and sending the retail price of anthracite up to such an exorbitant figure as to prohibit its use for household purpose by people in moderate or straightened circumstances, has turned the attention of many to the possibility of using soft coal in its stead. At the first glance those who have not considered the subject thoroughly are apt to take the position of a wholesale coal dealer who stated offhand that he did not see why bituminous coal should not answer all purposes, as the people out West, who could not get anthracite, had been using soft coal for years with satisfaction. While it would create more smoke, and a family might have to put up with certain inconveniences from its use, they would not, in his opinion, have to suffer from the cold, and they could also count on cooking their meals.

The New York stove men do not, however, take this favorable view of the situation, and in the issue of the *Evening Post* of a few days ago R. H. Horne of the J. L. Mott Iron Works gave his view of it in this way:

There would be no reason in the world—except the existence of the Health Board and the city ordinances that soft coal smoke is a nuisance—why New York's householders should not burn soft coal at home as they do in the West if it were not that the stoves in use here are not soft coal stoves.

can this cleaning be neglected, for a lapse will mean that the range will refuse to work and the fire go out.

As stove manufacturers we know the trouble that is experienced now to keep flues clean, as the neglectful housewife invariably blames first the landlord and then the stove for her own failure to occasionally clean out the soot. What this nuisance would amount to if soft coal were used in our stoves generally we cannot predict. The flues would get choked up with soot continually, every spot, every crevice, every ornament and curtain in the house would be black and dirty, and the soot and smoke would even penetrate to the exterior of the house.

In the country the damage to frame structures would be something awful to contemplate, and I think I am safe in saying that the house in which soft coal was used this winter would urgently call for entire repainting and redecorating inside and out in the spring, at a cost probably more than double the amount involved in the difference between the cost of the winter's supply of hard and soft coal.

It is a fact that soft coal will throw out as much heat as anthracite, perhaps more, but heat is not everything. Comfort and cleanliness are also likely to figure in the ordinary household. As for the matter of expense it should be remembered that much of the smoke of soft coal is carbon, and this is all wasted, so that it will take more soft coal to accomplish certain purposes than if hard coal had been employed. In other words, you would find that while you were able to heat your house nicely with 10 tons of hard coal last year it would probably take 15 tons of bituminous to do it this year. Of course, there are patented devices for consuming this soft coal smoke, but they can only be used in big manufacturing plants. Their application to ordinary household stoves and ranges has been very limited, and they are in but few instances in use.



## TRIBULATIONS OF FURNACEMEN.

BY CALORIC RAYS.

I am often asked the stereotyped question, "What kind of a heating system would you put in your house?" Well, that depends. If my house was going to be as big as the Waldorf-Astoria I should favor steam, but if an ordinary knockabout eight or ten room house I would have hot air—that is, a furnace system. But, my dear sir, if I were so fortunate as to even contemplate a new house I would not have a Cheap John tinker put it in. That furnace, and all that was linked, soldered, cemented and hung to it to make it complete, would be in proper proportions with all pertaining thereto and according to law and safety.

The trouble, my friend, is that the average man will take his plans, hire himself to some contractor and get his bid on the whole blooming business. After he gets it a bright idea, but an old one in the world, strikes him, and he takes those plans to another contractor and gets his bid, hinting at the same time that he must get down to a certain figure if he wants to get the job. And so he goes the rounds until the whole gamut is run and he finally or invariably takes the, by this time, much be-thumbed and blurred plans to the first bidder and to him he says: "See here, Mr. Tenpenny, I want you to build this house, but you're too high by \$399. If you lop off, say, \$398 the job's yours. What yer say, eh?"

### SKIN WORK.

Well, the \$398 are lopped off. But there is a reddish gleam in the builder's eye. He can skin the job, and skin every subcontractor under him. And "let's see; the job calls for furnace heat. No style, no make, no size; simply furnace heat. All right." Then the contractor sallies forth on a skinning tour. The mason, the painter, the plumber are visited and, finally, the Cheap John tinker; the man that gets more furnace work than all the others in town combined—of course, not on account of merit or reliability or reputation. This Cheap John tinker either doesn't know as much about furnace work as a clam does about performing on a trapeze, or he knows as much about it as any of them. But he is in it for the dollars, and as the majority of the people are looking for bargain counter prices in furnace work he has seared his conscience and hardened his heart and he gives the man what he wants—a cheap job.

He has become a "bucker," and can afford to buck any "son of a gun" in town on furnace prices. He gets the job; he skins it, flays it and lets the owner do the scorching—scorching the casings, scorching the galvanizing off the smoke pipe, charring the beams in the cellar trying to keep warm. He burns out the 18-inch pot in two weeks' time in trying to do the work of a 26-inch pot, and all for the want of a little fresh air, trying to force enough air through a 10-inch cold air pipe to fill four 7-inch, three 8-inch and four 9-inch pipes. The whole job was put in on the same merits that sold the Scotchman's razor, "'Twas made to sell, not to use."

### APPEARANCES DECEPTIVE.

True, the job when new looked nice to the inexperienced eye; uice, bright tin pipes. Of course some joints were gaping for additional air, while at the augles some of the pipes did bag at the knees. And the cold air pipe, "Why, bless your soul, it's the same as your neighbor has got." (That heats four rooms.) Then the registers. They all have the same sized grin on their faces. The 7 x 6 x 9½ foot bathroom 7 x 10 inch register smiles at the 8 x 10 inch register in the 14 x 15 x 9½ foot sitting room and the 8 x 10 inch register in the 12 x 14 x 9½ foot reception hall for not doing their duty. They get all the cussing and spitting at, while he is hugged and praised for being so faithful and up to snuff and right over the furnace.

The owner goes to John Tinker: "See here," says he, "I can't heat my house; what ails your furnace anyway?" John Tinker looks at him with a pitying smile, "What's up now?" "Why," exclaims the owner, "I can't get any heat to my sitting room or hall. I've burnt 4 tons of coal in six weeks, but no heat." "Is that so?" from Tinker. "Well, I'll send a man around to-morrow and fix it."

### INVESTIGATION AND THE RESULT.

The man is sent down. After lighting his pipe and surveying the job that some other journeyman put up for the same John Tinker, he soliloquizes, "A bum job." He goes back and hands in his time card, "Three hours. Repairing furnace at 40 Easy street for Mr. Cheerup." There is a suit. The owner sues. John Tinker, on the stand, testifies that there was nothing specified, only to put in a furnace job. And he did so. John Tinker wins the suit in addition to the three hours' time for repairing. The owner cusses the whole blooming business. At the suggestion of his neighbors he has the whole thing ripped out and pays \$675 for a hot water job.

### STARTING OUT WRONG.

Now, who is to blame, take it all in all? Why, in the majority of cases, the public—the owner. The owner has plans made for a house that would, if carried out to the letter, cost between \$6000 and \$7000; whereas in his own mind he chuckles at the prospect of getting a \$6000 house for \$4000. He has a conniption fit when he goes to a reliable contractor, who sublets only to reliable contractors, and gets his first knockout blow in the building business. Of course the plans are sent around the circuit and pass through clean and through dirty hands. They are looked over by honest eyes and by dishonest eyes. They are figured with an ordinary every day pencil and they are figured with a pencil so hard and sharp that the figures appear shrunken and ashamed of themselves. The low contractor, the cheap contractor, the man who, perchance, has failed time and time again and been discharged on a basis of assets so small that a keg of six-penny nails would not be the equivalent. Or it's the mau that has skipped from Maine to California, from the lakes to the gulf. He is a new man in town. He cuts a big swath, and in a little while, in the still night, vanishes to parts unknown, leaving the whole blooming shooting match, including our friend John Tinker, in the mud.

Then the owner in his wrath rises up and suggests some changes in the plumbing and the furnace heating, which call for extras, which he reluctantly pays for. The final scene: Total cost of house, \$8500, and nothing like or as good as the plans and specifications called for.

### MISERY FROM MISMANAGEMENT.

Another experience is like this: "Say, what kind of a furnace do you call that that your customer put in for me? Why, I can't get any higher than 55 degrees if I was to shovel coal all day. Run down to my house if it's cold to-morrow and see what ails it, will yer?" I go down. It's a cold day. The mistress is in. With a \$2 horse blanket over her shoulders and a scowl on her face she leans over the register trying to get warm. At the same time she is rocking a baby, who is buried up in the baby carriage. The temperature is 45 degrees. Whew! I meander down to the cellar, saying nothing but sawing wood. I look at the fire. I poke it gently and lo! it collapses into a dead faint. I go over to the cold air inlet. It is shut tighter than a fresh oyster with the lockjaw. I go about gently making the necessary changes. After doing so in the cellar, I meander over the house, opening all the registers. Down to the cellar again I go, find an old box, sit down, pull out a two for a fiver, light it and smoke; look over *The Metal Worker* and let things simmer. After a while I hear stirring around upstairs. I hear a lullaby song. I put on a little more coal; sit down again; then trot upstairs. Presto, change! The \$2 blanket has vanished, the scowl on the mistress' face has disappeared, while the little fat baby's legs are high in the air that now registers 75 degrees. A surprise to the lady of the house and a gratification to the baby.

After a few minutes' scientific lecturing on the principles of hot air heating, I leave with the blessing of the house, never to be troubled again by them, if they possess common sense enough to run the furnace as it should be run and keep a good fire, with good coal.

THE SUN STOVE COMPANY, Detroit, Mich., are erecting a building 30 x 70 feet as an addition to their plant, in order to accommodate the increasing demand for their products.



### The Orient Gas Stove.

We present in the accompanying illustration a general view of one of the attractive patterns of gas stoves which has recently been added to their already extensive assortment by the Reineke-Wilson Company, Pittsburgh, Pa. The stove is known as the Orient, and is constructed of cast iron and sheet metal. It has large radiating and heating surfaces consisting of an outer shell and an inner heating drum. In operation the air passes into the inner heating drum through a number of inlet registers and is discharged at the top of the



*General View of the Orient Gas Stove.*

stove through the outlet registers. The inner drum is directly over the fire and the air passing through it is rapidly heated. The products of combustion pass between the inner heating drum and the outer shell to a flue collar of ample size. The stove is fitted with cast iron fuel basket, cast iron drilled burners and nickel valves and mixers. A noticeable feature of the stove is the ample mica door and the nickel plated trimmings. The outer shell of the stove is made of planished iron with ornamental stamped steel top.

### Superior Warm Air Furnaces and Utica Heaters.

We have received from the Utica Heater Company, Utica, N. Y., a copy of their new furnace catalogue, consisting of 40 pages of letterpress, profusely illustrated and bound in paper covers. In offering this publication to the trade the manufacturers call special attention to the features embodied in the construction of their entire line, and state that during the past year they have brought out several new patterns of heaters particularly adapted to all climates and fuels. The company have had 25 years' experience in the manufacture and sale of heating apparatus, and claim to be in a position to meet every requirement of the trade in their particular line.

A valuable feature of the opening pages of the catalogue are short chapters on furnaces, heating and ventilation which the dealer will find well worthy of perusal.

Among the patterns which are presented special attention is called to the New Superior furnace, designed and constructed to meet the demand for a heavy all cast iron furnace for using hard or soft coal or coke. In its construction has been embodied the latest and most improved features that are to be found in the Superior line. The gas burning chamber is high above the fire and a complete combustion of the gases is claimed to take place before they pass into the return flue radiator. The fire pot is extra heavy and cup joints are used in connecting all parts of the furnace, thus avoiding the use of bolts and providing for expansion and contraction.

Another heater to which the company draw special attention is the Superior dome furnace, made with double feed doors. This has been brought out to meet the demands of customers in sections where wood is largely used as a fuel, particularly during the fall and spring months, or even during the entire season, and where a strong and powerful heating surface is required. The furnace is made in three sizes and is intended for burning hard or soft coal, coke or wood. Among the closing pages of the catalogue instructions for setting furnaces in brick are given, accompanied by a foundation plan showing the position of the brick piers, a description of the company's new revolving duplex grate, some information about hot air pipes and illustrations of the Imperial and Keystone steam and hot water boilers.

### Vulcan Gas Appliances for Heating.

The Willam M. Crane Company, with office at 1131-1133 Broadway, New York, have issued the fall edition of their catalogue No. 22, illustrating in an attractive style their leading specialties in the Vulcan and Manhattan lines. The leading place is given to the New Vulcan, a sanitary heater, made in two sizes for natural or artificial gas. The appearance is attractive and the construction is such that all products of combustion are utilized to the fullest extent. Following this are the Omega odorless sanitary blue flame gas stove; the Vulcan cylinder and perforated heaters; the Vulcan radiators, shown in great variety; asbestos and reflector gas heaters, a handsome line of Manhattan gas heaters for open fire places, the Vulcan gas fires, the Vulcan log fires, gas logs, andirons, waffle stoves and miscellaneous goods of interest in this connection. The catalogue concludes with a description of the Vulcan gas furnace, which is so made that it can be automatically controlled.

### ODD PLATES

THE GREAT WESTERN STOVE COMPANY, Leavenworth, Kan., are increasing their manufacturing facilities by the erection of a five-story brick warehouse, estimated to cost \$30,000. It will be located at 910 to 912 Harney street, in the city named.

THE latest Colebrook novelty in advertising that is being sent through the mails by W. H. Colebrook Sons & Co., Syracuse, N. Y., takes the form of a card having attached to it a little pair of scissors with the legend, "Cut it Out." The lines underneath explain this advice as referring to cutting out all other kinds of Stove Putty and Furnace Cement except Colebrook's.

A NEAT pamphlet which is being sent out by the Peninsular Stove Company, Detroit, Mich., calls attention to some of the leading points of the Oak Peninsular Hot Blast Smoke Consumer, which is intended for using any kind of coal or wood. The Stove is of handsome exterior and is offered in a number of sizes. Its special features include steel base, treble jointed corrugated fire pot, which is said to increase the durability and heating surface of the Stove, deep reflector ring, air tight ash pit door, capacious ash pan and portable magazine for hard coal. The Duplex grate and shaking ring can be withdrawn when desired without removing a single plate or bolt.

THE plant of the Rome Stove Works, owned by Bowie & Terhune, at Rome, Ga., was destroyed by fire on the night of September 6. The fire started about 7 o'clock in the evening, and before it was thoroughly under con-



trol extensive damage had been done. The loss is placed at about \$45,000 and the insurance at about \$35,000.

THE PHILADELPHIA STOVE & IRON FOUNDRY COMPANY of Philadelphia, Pa., have been absorbed by the Philadelphia Stove Company, recently incorporated. Howard H. Dickey is president of the new company and Robert W. Trump general manager.

WE have received from the Fuller & Warren Company, Troy, N. Y., a copy of an attractive pamphlet relating to the P. P. Stewart line of Ranges which they manufacture in great variety. The printing is in old gold and black upon a good quality of paper and the binding is in colored covers of appropriate design. A short obituary with portrait of P. P. Stewart is found on the first page, following which are interesting comments regarding the goods shown. In speaking of the P. P. Stewart the manufacturers state that it is their aim to produce a Cooking Stove from which the most excellent and satisfactory results may invariably be obtained with the least expenditure of fuel; at the same time grace and beauty are not sacrificed to utility. The P. P. Stewart is offered in a great variety of styles and sizes and embodies features which have established for it an enviable reputation in the trade. Particular attention is called to the removable nickel work of the Stove which affords the opportunity for thoroughly polishing the parts by rendering them easy to handle. The band is also removable and is firmly held in position by means of a thumb screw. Broken views of the Range show the more important features of construction in a way to render them easily understood by the dealer and user.

BRIDGEFORD & Co., Incorporated, Louisville, Ky., are greatly rushed in their Steel Range department. They find a scarcity of skilled workmen in this line and could possibly give employment to a few hands.

BERGSTROM BROS. & Co., Neenah, Wis., have recently issued a new price-list covering the Royal line of Steel and Cast Ranges, Cook Stoves and Heaters. It is sent out in the form of a four-page folder and gives such information relative to the Stoves in question as the dealer is likely to find convenient and useful.

A PACKAGE of trade literature which is being sent out by the Graff Furnace Company, 208 Water street, New York, presents much interesting information relative to their various lines of specialties. Among the matter is a neat catalogue and price-list of the Faultless and Columbian Ranges, made in both portable form and for brick setting. The Faultless is provided with extra large single oven, and it is also made with double oven in order to meet specific requirements. Some of the styles are fitted with vertical circular boilers and others are provided with the horizontal boiler. The company also make Combination Ranges for gas and coal, which have established for themselves an enviable reputation in the trade. They are particularly serviceable in flat houses where space is always at a premium. Under the name Hero the maker offers an attractive Range which is thoroughly up to date in all respects. The Elegant Elevated Oven Range and the Elegant Fire Plate Heater are also illustrated and described. Other specialties referred to include the Comfort Furnace, built according to the most improved ideas; the Hot Blast and Tubular Cast Iron Furnace; the Oregon, made both in portable form and for brick setting; the Hero Steam and Hot Water Boilers, and the Rival Furnace, made in four sizes in portable form and in two sizes for brick work.

THE STANTON HEATER COMPANY, Martins Ferry, Ohio, are making the "radiating" or "crown" sheet of their Stanton Heater of the best quality of fire box steel several times as thick as is ordinarily employed for steel radiators in warm air furnaces. The construction is such that expansion and contraction are said to have no effect on any joint, neither does the fire come in contact with any joint or seam in the entire construction.

THE MONARCH STOVE & MFG. COMPANY, Mansfield, Ohio, refer to the Monarch Triplex No. 63 Gas Heater as a powerful construction of original design. It has

three 6-inch Russia iron radiator pipes, within which are located smaller tubes, each flattened at the lower end, forming the back walls of the burners. The heated air passes up and around these tubes, heating also the current of air within, which is taken from the floor, and discharging it through the open work at the top.

THE BELLEVILLE STOVE WORKS, Belleville, Ill., are making a very extensive line of Malleable Ranges and Steel Ranges, both with single and double oven. They are also offering a great variety of Cast Cook Stoves, Ranges and Heaters, the merits of which are strikingly set forth in a new catalogue which they have just issued. Special reference is made to the Splendid St. Clair Steel Cook Stove, the Incandescent St. Clair Oak and the Incandescent St. Clair Air Tight Heater.

THE Model Ruby four-hole Cook Stove, which is being offered by the Home Stove Company of Indianapolis, Ind., is made both with steel and cast ovens. While intended for using coal or wood as a fuel, the company also make it for burning wood exclusively according to circumstances. It is of neat exterior, cast ornamentation being largely used in its decoration. The oven is perfectly square, measuring in one size 18 x 20 x 13 and in the other 20 x 22 x 13. The Stove is one of the latest additions to the company's assortment and the manufacturers expect it will meet with a hearty reception.

### Examinations for Ironmongers' Clerks in England.

Our London correspondent reports that the Ironmongers' Federated Association of the United Kingdom are preparing a system whereby ironmongery clerks can pass an examination and obtain a certificate. The idea has progressed so far that a proposed syllabus has already been evolved. The syllabus, in full, is as follows. The numbers preceded by an asterisk will be considered optional subjects:

- 1.—Standards of Weights and Measures and their usual divisions.
- \*2.—Standards of Metric Weights and Measures and their usual divisions.
- 3.—Gauges in common use for Wire and Tube.
- 4.—Calculation of Areas.
- \*5.—Calculation of Cubic Capacities.
- \*6.—The Physical Characteristics of Metals and Alloys. Definition of ductility, malleability, elasticity and tensile strength.
- \*7.—Oxidization or Rusting. The particular properties of Iron (wrought, malleable, cast and steel), Copper, Tin, Lead, Zinc, Gun Metal, Phosphor Bronze, Pewter, Brass, Nickel Silver, Britannia Metal and Aluminum.
- 8.—Methods of Preserving from Oxidization.—Painting, lacquering, bronzing, plating, tinning and galvanizing.
- 9.—Hardening and Tempering of Metals.
- 10.—Methods of Joining Metals. Welding, brazing, soldering and riveting.
- \*11.—Relative Electrical Conductivity of Metals.
- \*12.—Gas Fitting. Sizes of pipes for installation of a given number of lights. Choice of metals for special situations.
- \*13.—Sanitary Plumbing. Forms of traps, closets and lavatory basins. Sizes of waste pipes. Joints used, for lead and iron pipes in sanitary work.
- 14.—Domestic Hot Water Supply.
- \*14a.—Heating by Hot Water. High and low pressure.
- 15.—Locks. The general principles of construction and various kinds in common use of Locks, Lock Furniture and Hinges.
- \*16.—Bells—Electrical and Crank. The principles of the telephone and speaking tube.
- 17.—Builders' Black and Brass Foundry. Knowledge of usual stock articles. The candidate will be required to draw out specifications and make sketches.
- 18.—Nails, Locks, Bolts and Nuts, Screws and Rivets, various kinds and their common uses.
- \*19.—Tools, trade classification as Sheffield list; and Cutlery, pocket and table.
- 20.—Hollow Ware. Cast, wrought, stamped, enameled, tinned and galvanized.
- \*21.—Scales, Weights, Spring Balances. The requirements of the Weights and Measures Acts.
- \*22.—Wire and Wire Goods.
- \*23.—Rain Water Goods. Pipes, Gutters and Fittings.
- \*24.—Kitchen Ranges.
- \*25.—Stove Grates.
- \*26.—Planning Glazed and Unglazed Tiles.
- \*27.—Agricultural Implements. Plows, Harrows, Drills, Mowers, Reapers, &c.
- 28.—Steam, Gas and Water Tubes and Fittings.
- 29.—Making Drawings and Instructions for Workshop.

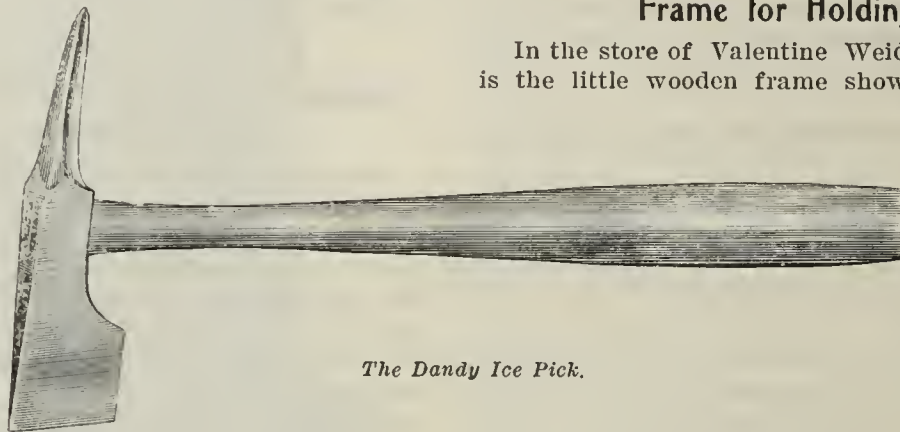


- 80.—Handwriting, Orthography and Calculation of Discounts; also Bookkeeping.  
 \*31.—Lamps. Structure, materials and appliances for safety of petroleum Lamps; Colza and other heavy oil Lamps.  
 32.—Woodturnery. Builders' and house furnishing.  
 \*33.—Colliery and Mill Furnishing.  
 34.—Ship Chandlery.

Examinations will be held every six months in the principal centers, viz.: Birmingham, Bristol, London, Manchester and Newcastle. The examination committee may decline to hold an examination if less than ten applications are received by the secretary. Ninety per cent. of total possible marks entitle the candidate to a first-class certificate with honors; 75 per cent. of total possible marks to a first-class certificate; 50 per cent. to a second-class pass. There are other regulations, but these are the chief.

### The Dandy Ice Pick.

The Franklin Specialty Company, 627 to 631 Franklin street, Reading, Pa., are manufacturing and have just placed on the market the Dandy ice pick illustrated herewith. This ice pick is nickel plated all over, and the handle is of polished hickory. The length of the tool is 11 inches and it weighs only 8 ounces. The pick is



*The Dandy Ice Pick.*

said to be remarkably adapted to its purpose, besides being of attractive appearance.

### The Grimm Sap Spout.

G. H. Grimm & Co., Rutland, Vt., have placed on the market the sap spout shown in the accompanying illustration. It is made from one piece of No. 21 gauge steel. The tinning is the last operation so that the raw edges are covered with pure block tin, besides being a guarantee against rust. The holes opposite each other at the large end are for inserting a nail to form a handle, by means of which the spout is slightly turned and thus is readily removed from the tree. The hole at the



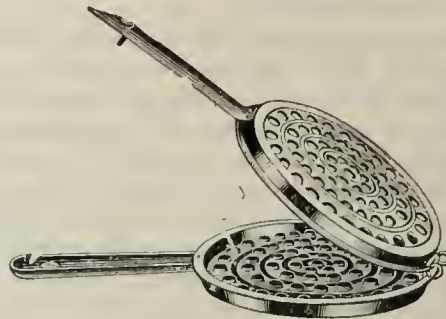
*The Grimm Sap Spout.*

bottom of the small end is for draining the sap from the bore so as to prevent the formation of ice and the accumulation of sour sap in the bore. The spout will fit  $\frac{3}{8}$ -inch,  $\frac{7}{16}$ -inch and a  $\frac{1}{2}$ -inch hole. By reaming a  $\frac{3}{8}$  bore to  $\frac{7}{16}$  inch, and a  $\frac{7}{16}$  bore to  $\frac{1}{2}$  inch at proper intervals during the sugar season one fourth more sap, it is claimed, will be obtained; also that with the use of this spout removing of the bark from the tree is not required. The spouts are furnished with and without hooks.

### The Improved Henis Broiler.

The Royal Mfg. Company, 408 Commerce street, Philadelphia, Pa., are offering the improved broiler shown herewith. It is made of heavy sheet steel, having deep circular grooves in both sides of the broiler to

retain the juices of the meat. The perforations are punched and upset so as to make it impossible for the juice to escape, and the meat, held firmly, is cooked in its own juice. It is explained that the nutritious juices are retained and conveyed back to the meats, in the self-basting process, by simply reversing the broiler a few



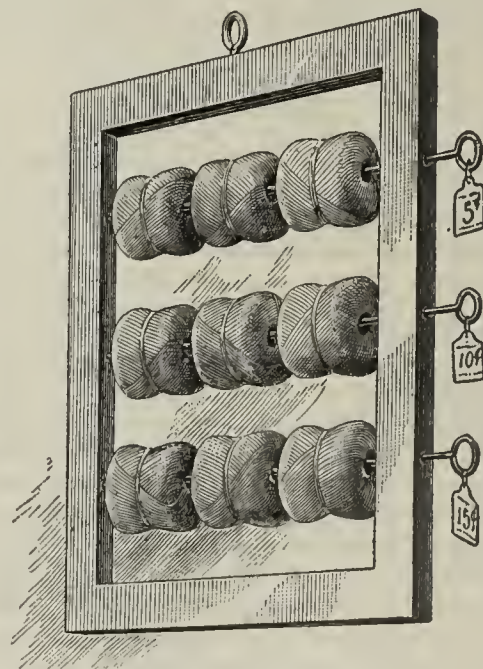
*The Improved Henis Broiler.*

times while broiling. The broiler is made in sizes Nos. 8 and 9 to fit the stove hole, and in use, it is explained, there is an absence of smoke and no soiling of stove or range.

### Frame for Holding Twine.

In the store of Valentine Weidig, Unionville, Conn., is the little wooden frame shown in the accompany-

ing illustration. There are three holes in each side and through each set of holes is passed a 3-16-inch iron rod, one end of which is bent in the form of a handle. These rods are run through and support the balls of twine, as illustrated. To the handle on each



*Frame for Holding Twine.*

rod is fastened a tag, giving price of the twine on that rod. The frame is hung where it can be readily seen by means of the screw eye shown on the top.

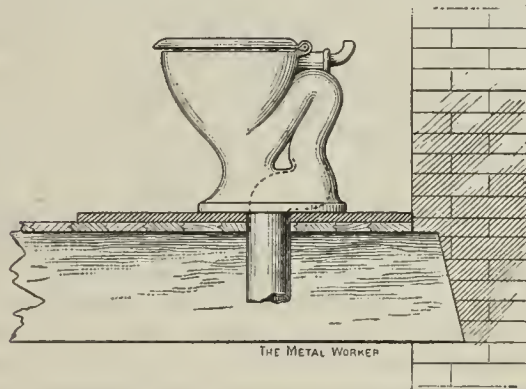
H. M. CLINE & SON are a new firm who have gone into the retail Stove, Hardware and Tinware business at North Topeka, Kan.



## WATER CLOSET FLOOR SLABS.

BY HELMAR.

Some residences, and nearly all public buildings, of whatever character, have tile, cement or mosaic floors in the toilet rooms. These floors need nothing better to set the closets on, but the majority of residences have wood floors throughout, usually soft wood, and a wood floor of any kind is not good to set a closet over. Hence the use of floor slabs. Yellow pine, known as "hard pine" in the Northern and New England States, is even



Water Closet Floor Slabs.—Fig. 1.—Plain Thin Slab on Floor.

worse than white pine, on account of its inability to withstand dampness without rotting.

In Fig. 1 is shown a section of a type of slab called a floor slab by the "scrimp" element. It is square edged, plain faced,  $\frac{7}{8}$  inch thick, set dry, rocks over one or two points like a five-leg table with the middle leg on a hump, and its dimensions are—too small. On cheap contract work the writer has seen the slabs all sizes, from just the size of the closet flange to 18 x 24 inches.

The purpose of a floor slab is not merely that the closet be "set on marble." The idea is to have the closet over a non-absorbing surface that will catch and hold accidental dripping, leakage, &c., and which can be sponged clean, with no injury to it or the surroundings. A small slab will not catch drippings or slight leakage effectively, whether plain or countersunk. If small and set back it raises the closet uncomfortably high. If set forward it does not reach the wall behind and the front edge is just far enough forward to make a stumbling place for the feet. If the

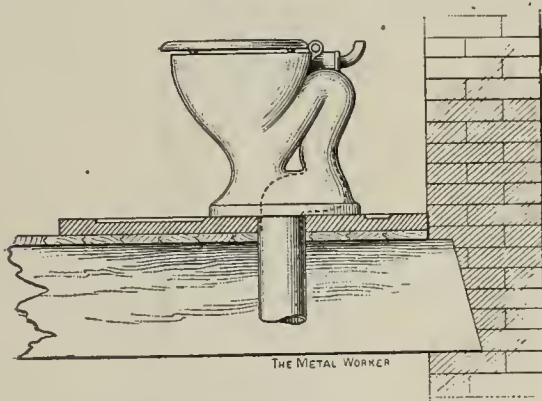


Fig. 2.—Countersunk Slab Placed on Floor.

closet room is to contain no marble except the floor slab the right way is to have it reach the wall behind, before shoe sham is put down, and extend far enough forward to make good foot room; and unless the room is very large it should go to the wall at both sides of the closet.

All slabs should be countersunk all around, leaving a boss the shape of the base of the closet to be used, except about 1 inch larger for a margin. A drip pipe from a residence floor slab is of but little consequence. It will not have the chance to take care of any considerable leak, and the room is cleaned so regularly that a small leak is discovered through the water in the countersink before it does much damage. When a drip pipe is put in it should discharge into the outer air or with open end over a sink or in basement, covered by

a gravity flap to keep air from circulating freely through it.

In Fig. 2 is represented a slab set on the regular floor. It is countersunk  $\frac{1}{4}$  inch, is  $1\frac{1}{2}$  inches thick and has a chamfered front edge. It is flat on the bottom side. Every projection above the level on the floor covered by the slab was removed before setting the slab. A ring of creamy cement or plaster around near the edge of the slab and a few bars across and along the floor, about  $\frac{1}{8}$  inch deep, are sufficient bedding. The floor should be well dampened where the cement is placed to keep the cement from setting too quick, and the slab settled into place by jostling and pressing down. No screws are necessary to hold the slab in place. If the slab sets against a plaster or cement wall it should be flushed full and smooth around the edges with cement for a cement wall or plaster of paris for a plastered wall. If the room has a wood baseboard set in a shoe the slab should reach flush with the face of the base, which will require cutting off the shoe front. A strip to match the shoe front should be fitted all around the wall edge of the slab and properly membered with the shoe. The slab should never extend less than 12 inches forward from a line drawn down from the front of the flush rim.

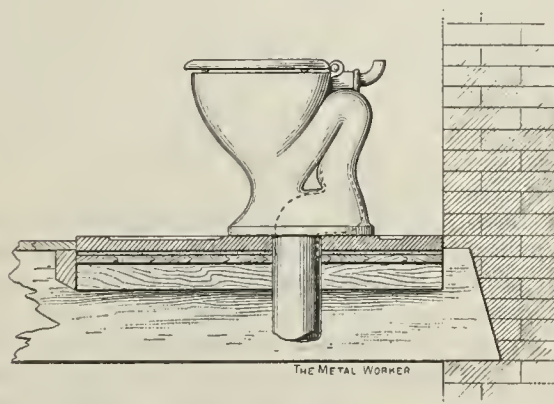


Fig. 3.—Countersunk Thick Slab Sunk to Floor Level.

A slab similar to the one in Fig. 2 is shown in Fig. 3. It is sunk so that the countersink is level with the top of the floor and the front edge chamfered down nearly to the floor level. If the house has no deafening floor it is best to cleat the joists and lay a floor low enough to receive the slab and a good bedding of cement, as shown in the sketch. If there is deafening it is only necessary to cut out enough of it to admit the slab and a bedding for it. In any case a strip should be put in to fill from the deafening or subfloor to the regular floor a little back under the regular floor line, to retain the bedding and make a good joint under where the slab joins the regular floor. The floor board which joins the slab along the front should be perfectly straight along the edge and without either groove or tongue, as shown. Slabs should never be less than  $1\frac{1}{2}$  inches thick, and if larger than 3 x 3 feet should be more— $1\frac{3}{4}$  or 2 inches, according to size.

It is scarcely necessary to say that slabs should be set level. When slabs are sunk in the floor the writer leaves the depth of the countersink above the floor level. They are apt to settle slightly and the floor may not be perfectly level to start with. The slab being a little high provides for these deficiencies.

W. H. SELVEY, president of the Selvey-Wyckoff Company of Springfield, Mass., died on September 11 at the Mercy Hospital in that city after a week's illness. Mr. Selvey had been connected with the plumbing business in Springfield for 23 years. He was born in Boston in 1862, and learned the plumber's trade in the employ of the Phillips Mfg. Company, rising to the position of superintendent of the steam fitting department. When the Phillips Mfg. Company were merged into the Selvey-Wyckoff Company Mr. Selvey was made president. Under his management the business has grown so that 50 men are employed. Mr. Selvey was prominent in social life in the city, and was a member of several clubs. He lived with his mother and sister, who survive him.



## The Range Boiler and Water Front.

BY M. L. KAISER.

With probably no other plumbing fixtures are natural laws so often abused and even totally disregarded as in the setting and connecting of the range boiler and water front. These fixtures may be properly set in several ways, but the wrong ways for setting them seem to be without number. Then, too, in some cases where the connections have been properly made originally, wear or deterioration, or some outside influences have produced a condition of things which should be remedied. The plumber should consider it a duty to warn the householder of the insecurity of an arrangement which to him is manifestly unsafe, and his reputation for honesty should be proof against the imputation that he is merely "hunting for work." The number of water front explosions—some of which have proved fatal, and almost all of which have done damage by fire or water—is a sufficient text from which to preach several sermons. Men and women will work day after day beside a boiler which rumbles and rattles so as to shake the house, when they would stay no longer than necessary in the vicinity of a steam power boiler when the steam is escaping from the safety valve at 80 pounds. Some of these domestic boilers and water fronts are under as great, or even greater, pressure, but the absence of a pressure gauge exemplifies the old saw, "Out of sight out of mind."

The term "boiler" is used throughout the present paper to mean the cylindrical storage tank of from 30 to 120 gallons capacity which is ordinarily seen connected with the domestic range. The word "water front" is used to designate the cast iron box, or wrought iron coil which heats the water in the boiler. What we call a boiler is, in English practice, called a storage tank, while the water front is the boiler. It will be seen that the English use of the two words is the more nearly correct, although, as a matter of fact, it is not desirable that the water should boil in either of the two fixtures.

### THE CONSTRUCTION OF WATER FRONTS.

One would think, considering the widely different conditions and varying pressures under which range water fronts are placed, that manufacturers of such goods would produce several patterns to meet those conditions. The reverse seems to be almost universally true, however. An excellent and heavy range was put on the market some years ago by a New York firm, about a dozen of which were placed among my customers the first year they were introduced. After being in use a short time several of the water fronts split, apparently without cause. Complaint to the home office brought the reply that they had never had any trouble with them, and that a large number of them had been in successful use for three years. They were probably all right for New York and vicinity, where the pressure from the house tanks is constant and comparatively light, but for a pressure varying from 50 to 75 pounds they were too weak. After replacing a round half dozen of the water fronts the manufacturers had a pattern made, smaller and heavier. However, it is not my purpose to find fault with the manufacturers of ranges, but to point out, if possible, some improvements which may be made by the plumber himself and give some hints which may be useful in overcoming difficulties often met with.

### CAUSES OF SCANT HOT WATER SUPPLY.

The complaint is sometimes made that "the range fails to heat the water." This may mean one of several things, or several things combined, and the plumber should take the trouble to ascertain: 1. Is the boiler too large for the water front, thereby furnishing large quantities of warm water, but no hot water except when water is drawn from the boiler only at long intervals? 2. Is the boiler exceptionally high in proportion to its diameter? 3. Is the range kept in constant use, or are short intervals of active firing succeeded by long intervals of severe checking? 4. Is the circulation good,

and are the circulation pipes properly arranged and graded? 5. Has the water front worked away from the side of the range, allowing cold draft of air to pass up between it and the range side, and is the checking done at the smoke outlet or at a check draft slide directly over the water front? 6. Did the present trouble originate at the time of the installation of a new boiler or of a new range, or at any definite time?

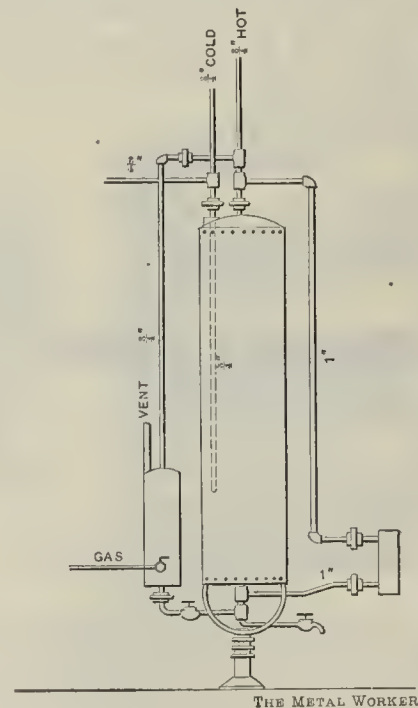
It matters greatly of course as to the amount of hot water used by the household, but it may as well be taken for granted that there will be no diminution in the amount of hot water used, and it is useless to advise or to expect it. A careful diagnosis of the case, as above outlined, will aid materially in prescribing for it, and in applying the proper remedy.

### BOILER TOO LARGE AND WATER FRONT CAPACITY.

In the case of condition No. 1, a boiler too large for the water front, the obvious remedy is to remove the large boiler and replace it with a smaller one. This is sometimes impossible, and an effective compromise may often be substituted. The reason that the abundance of warm water never gets really hot is that it takes a longer time than is allowed for the whole bulk of the water to pass through the water front; and while the water passing into the boiler through the upper, or flow, pipe is quite hot enough, it becomes cooled in passing upward through the mass of water in the boiler without appreciably raising the temperature of the whole body of the water. In general it is good practice to connect a 30-gallon boiler to a water front having an area of 75 square inches exposed to the fire; a 40-gallon boiler to a water front of 80 to 100 square inches area, and a 50 to 60 gallon boiler to a water front exposing an area of from 100 to 120 square inches area. These figures are mere averages, however, and may vary greatly under different conditions of firing and different makes of ranges. Indeed, it frequently happens that the tenants moving from a house have had considerable trouble with the range and water front, while the family succeeding them have had no trouble whatever.

### THE BENEFIT OF TOP CONNECTIONS AND SPECIAL WATER FRONTS.

If the flow pipe is disconnected from the side of the boiler and extended upward to connect to the hot water



The Range Boiler and Water Front.—Fig. 1.—Top Connection for Quick Heating.

distributing pipe at the top of the boiler, the hot water will flow from the water front to the top of the boiler direct, without passing through the whole body of comparatively cool water. A layer of hot water of varying depth is thus held in reserve in the top of the boiler, to be drawn off as needed. Care must be taken that the hot water service pipe is extended higher than the flow pipe connection, so that the circulation cannot be impeded by the collection of air. This method of connection, shown in Fig. 1, also answers well for overcoming



conditions Nos. 2 and 3, and for connecting a boiler to a gas range, or to a gas water heater, either permanently or for the hot season. Where it is desired to connect a gas range for summer use only in kitchens where the ordinary coal range must be used occasionally, the branches and plugs may be left in the hot water service pipe at the top of the boiler and in the return pipe near the range, and the gas range may be connected and removed with ease, neither range interfering with the operation of the other. Another method of overcoming conditions Nos. 1 and 3—and the better method, if the expense can be borne—is to order from the range manufacturers a special water front to extend across the rear end of the fire box in addition to the side, thus forming an L shaped box or water front, as shown in Fig. 2,

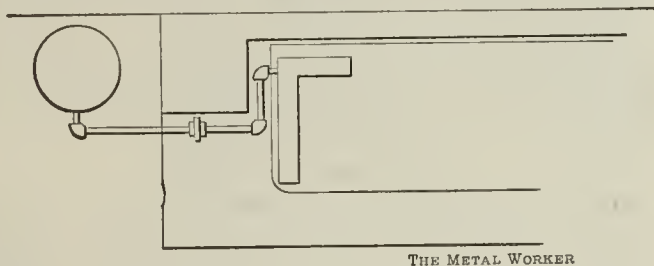


Fig. 2.—Special Water Front of Increased Heating Capacity.

with the connections in the usual place. This has been done in several cases with marked success.

#### POOR CIRCULATION FROM BAD PIPING.

As hinted in Condition No. 4, defective circulation may be one of the causes of the failure of the range to heat the water properly, and is sufficient of itself to cause the whole of the trouble. This condition may be due to the corroding and filling of the water front or of the circulating pipes with rust or sediment, to the faulty grading of the pipes, or to the number and abruptness of the angles. It scarcely need be said that the connecting pipes should be as direct and have as much grade as possible, and yet many ranges are connected with apparently no regard whatever for those considerations. Many ranges are now connected to the boiler with iron or brass pipe, with standard tees and ells, the radius of which is very short. To add to the retarding effect of these abrupt changes in direction the cut ends of the pipes are usually left with a very pronounced burr on the inside, made by the cutters. These burrs should be carefully removed with a reamer of the proper size. When a few elbows and some extra piping may be saved by omitting to parallel one pipe to the other, as

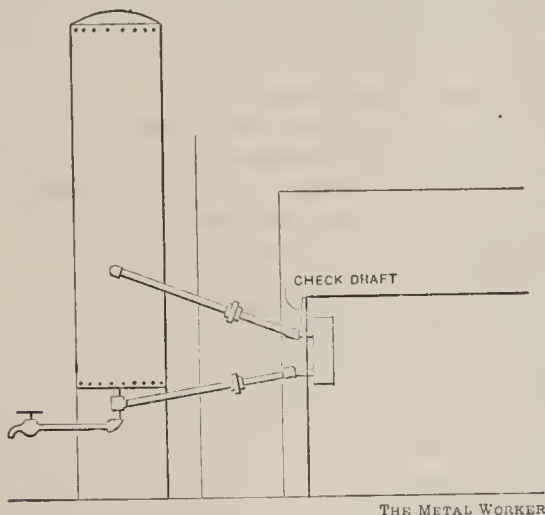


Fig. 3.—Connected to Avoid Friction.

shown in Fig. 3, it should be done, even at the expense of a less sightly job as the result. The beauty of a thing lies in its utility, anyway. At one time many cyclists ridiculed the pneumatic tire bicycle, with its enormous rims, while to-day no one would consider for a moment a solid tire bicycle.

#### STOPPAGE FROM CORROSION AND BURRS.

Usually, circulating pipes of galvanized iron are permitted to corrode and retard the circulation until a leak appears. When such is the case a thorough examina-

tion should be made of those parts which are still sound, and if at all corroded new pipe should be put in throughout, as it is very seldom that the old pipes will stand the strain of taking apart and putting together again. In renewing old range connections—and in placing the original connections as well—the pipes should never be less in diameter than the tapping of the water front, and in the case of unusually long and tortuous connections should be one size larger than the tapping of the water front.

The bore of the pipe should be preserved full size throughout, as water will pass through the pipe no faster than it can pass through its most constricted point. The ordinary brass boiler couplings are not suitable for water front connections, except for small ranges and boilers. They are almost invariably smaller inside than the pipe for which they are threaded, and the interior surface is quite rough. The same may be said of the ordinary brass boiler Y, which is often used for connecting one boiler to two ranges. Although threaded for 1-inch pipe on all three ends, the interior bore is not more than  $\frac{3}{4}$  inch, and is often less. Until a special fitting of proper proportions is made for such work the ordinary 1-inch pipe fittings are much better. If threaded malleable unions are used in the connections a pattern should be chosen which is large of bore at the washer ring in the center and not contracted, as shown in Fig. 4, or the washer ring may be cut away

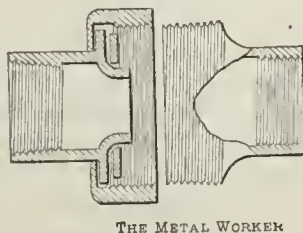


Fig. 4.—A Character of Union to Avoid.

entirely if reasonably stiff washers are used. Red fiber washers are probably the most durable packing for malleable unions with flat seats. For the screw joints of the range connections white lead ground in oil is preferred by many plumbers. If the boiler is large for the water front and the size of the water front would seem to justify it, benefit may often be obtained by removing it and having it tapped one size larger and increasing the size of the connections correspondingly.

#### OTHER CAUSES OF TROUBLE.

Condition No. 5 hints at causes outside of the water front, the boiler, or the connections. The water front may have been jostled out of place somewhat by strain-

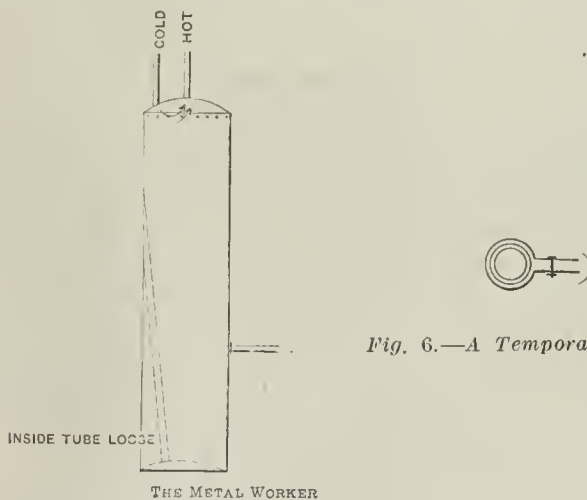


Fig. 5.—Displaced Tube Causes Trouble.

ing the pipes in making the connections, or it may have been worked out gradually from other causes. When the water front is set in place, and before the connections are made, it should be firmly wedged against the opposite side of the fire box until the connections are completed. Fire clay or furnace cement should then be plastered along the top against the side of the range to prevent the draft of air from passing up alongside of it, thus cooling it and injuring the draft of the fire at



Fig. 6.—A Temporary Repair.



the same time. In some of the portable ranges check draft doors and slides are located directly over the water front, as shown in Fig. 3, with the result that the air passes directly over it if the slide is much used. Suitable check drafts placed in the smoke pipe near the range collar will obviate trouble from this source.

Another cause of insufficient hot water is the absence of the inside extension of the cold water supply, which enters at the top of the boiler by means of a delivery tube. This may have been left out by accident or neglect, or may have corroded off and dropped down inside of the boiler, as shown in Fig. 5. The cold water mixing with the hot water will temper it to lukewarmness, and if much water is drawn from the boiler a short circuit is likely to occur, the cold water entering and passing across the top of the boiler and out by way of the hot water service pipe.

#### MAKING REPAIRS.

Condition No. 6 implies that definite information may be given as to the cause of the ineffective working of the boiler or range, information which the householder is seldom able to give. In case the cause is known, however, it is a comparatively easy matter to apply the remedy. It may be well to mention at this point that it often happens that the range connections spring a leak at precisely the time when the range can least be spared. A temporary repair may be made by means of a clamp made of strap iron or heavy sheet metal fastened around the pipe with a stove bolt, with a piece of sheet gum under the clamp and over the hole, as shown in Fig. 6. It sometimes happens that the tapping of the boiler connections is larger than standard originally, or has corroded so as to make it difficult to make a tight joint at these points. Miner's cotton soaked in red lead and wrapped around the threaded end of the pipe is often efficacious in securing a good joint. It is often possible to make the thread on the end of the pipe longer than usual and run a lock nut back to the shoulder before screwing in the pipe. When the pipe is screwed into the boiler a sufficient distance miner's cotton or cotton string and red lead may be wrapped around the pipe thread against the

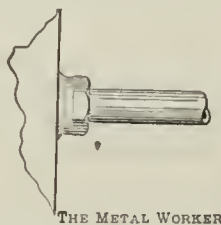


Fig. 7.—A Jam Nut Connection.

boiler, and the lock nut screwed back against the cotton, as shown in Fig. 7.

#### CAUSES OF NOISE.

Notwithstanding that many householders become so accustomed to the rattling of the boiler that no attention is paid to it, it frequently happens that complaints of that nature are made, and it is "up to" the plumber to find and remove the cause. At the start care should be taken to see that the cause of the noise is at the boiler or the water front, and not the result of the vibration of some loose piece in the faucets or pipes. The noises may be caused by, 1, partial stoppage of the boiler supply pipe; 2, partial stoppage of house service pipe; 3, air pocket in the water front; 4, blister on inside of the water front casting; 5, partially clogged range connection; 6, pipes pitching in the wrong direction.

A frequent cause of the rumbling noise in boilers is a restriction or partial stoppage of the cold supply to the boiler, usually at the tube extending down inside of the boiler. It often happens that the water in the boiler, which may be under a pressure of 50 pounds per square inch, is at a temperature considerably above 212 degrees. On opening the hot water faucet hot water will flow from the boiler and the small stream of cold water flowing in to take its place is insufficient to maintain the pressure in the boiler, allowing steam to form in bubbles, which are at once condensed on contact with the cooler water. This will continue until the whole

body of water in the boiler is reduced in temperature below the point where steam will form under the pressure then in the boiler. When the hot faucet is closed the rumbling will cease at once, as the pressure will quickly rise to a point where steam cannot form unless the temperature of the water is raised still higher.

#### SMALL SUPPLY CONNECTIONS.

In this connection it may be well to call attention to the practice of inserting in the boiler inside supplies of  $\frac{1}{2}$  inch diameter. Although the boiler may be large and the supply up to the boiler and through the house is  $\frac{3}{4}$  inch, hot water cannot be drawn from the faucets any faster than the cold water enters the boiler through the boiler tube. Where the boiler tube is of wrought iron corrosion reduces its diameter still more. The brass boiler ells made with inside tapped to receive this tube are almost invariably tapped  $\frac{1}{2}$  inch. A long tailed cast bushing may sometimes be tapped to receive the threaded end of a  $\frac{3}{4}$ -inch tube, while for a connection high enough, a heavy 1-inch nipple may be tapped to  $\frac{3}{4}$  inch inside to receive the tube.

#### NOISE FROM STOPPAGE.

If instead of being in the supply pipe near the boiler the partial stoppage is in the service pipe in the basement or outside of the house line the same thing as above described occurs when the cold water faucet is opened as well. In such case the pressure is suddenly reduced at all points inside the partial stoppage, allowing steam to form and condense in the boiler in rapid pulsations when the conditions are right. On closing the faucet the pressure will be restored to the normal again, although the open passageway for the water may be no larger than the size of a pin. The only remedy for the above condition is the removal of the stoppage. If foreign matter of some sort has lodged in the curb stop, or in the corporation tap at the main, it may generally be removed by pumping several bucketfuls of clean water into the main through the cold water faucet at the sink. A little experience will quickly enable the plumber to judge by the action of the pump if the above is the case, or if the stoppage is the result of a general corrosion and filling of the pipe. Time spent in trying to clean out a corroded wrought iron service pipe is time wasted, and nothing short of renewal will permanently cure the trouble.

#### REPLACING IRON SERVICE PIPES.

It is often desirable to remove and replace a wrought iron service pipe without the necessity of digging up the entire length, as in the case of a handsome lawn and flower beds, or under a verandah. A length of from 18 to 40 feet in a section may be left undug, varying with the nature of the ground and the smoothness or roughness of the pipe to be removed. Short ditches should be opened along the line of the pipe in sections and the pipe cut apart. Beginning in the cellar a ring with set screws, or a bar of iron with a drilled hole of proper size is slipped over the end of the pipe, and a strong lever and fulcrum operated to draw the pipe out of the ground and into the cellar, shifting the hold as often as necessary. The pipe should be twisted with a wrench in the direction for screwing up while the pipe is being drawn inward. This operation may be repeated at each opening until the entire pipe is withdrawn. The new service pipe, with a good point screwed on the end, may be guided into the openings formerly occupied by the old pipe, and the lever and chains operated to push the new pipe into place, turning the pipe as before. A sledge may often be used to good advantage in driving the pipe in the ground. Care should be taken not to make the sections too long, or the strain on the pipes may be too great. Unless the character of the earth through which the pipe passes is favorable this method is not less expensive than to dig up the entire length.

#### TROUBLES FROM STEAM AND AIR POCKETS.

It sometimes happens when hot water is not drawn for some time that the upper part of the boiler is filled with steam, the expansion of which has driven out the corresponding bulk of water through the boiler supply and house service pipe. On opening the hot water faucet steam will issue and the water driven out will again flow back into the boiler. This operation, al-



though removing the danger of a still greater accumulation of steam, is attended with some noise and may give rise to the fear that something is wrong with the installation. This condition of things is quite normal, however, and represents the power of the apparatus to relieve itself of excessive strains. For this reason no check valve should be placed between the boiler and the main supply unless the boiler is provided with some other safety or relief valve. If the condition described above is of frequent occurrence a larger boiler should be substituted, or one or two radiators may be connected to absorb and radiate the surplus heat.

It sometimes happens that the water front becomes pitched at an angle which allows air to collect in the end opposite the pipe connections, as shown in Fig. 8. In such a case, when the water front gets hot enough to form steam, the air is driven out and the steam takes its place. On drawing water from the boiler the entering cold water finds its way almost directly to the return pipe leading from the boiler to the water front, condensing the little pocket of steam and producing a sharp rapping sound. If the inside supply extension reaches to within a few inches of the bottom this result is the more likely to occur and with a much greater racket than if the pipe ends a few inches below the side connection.

A bubble formed on the inside of the water front casting, from which the water cannot easily escape, will furnish a running accompaniment of raps which will continue as long as the casting is hot enough to form steam under the bubble or scale. Such a water front should be returned to the manufacturer and a perfect one substituted.

#### PIPES PITCHED WRONG IMPEDE CIRCULATION.

Circulation pipes pitched in the wrong direction are also productive of noise; not, however, from the same cause as above described. Where a pocket is formed in the pipes, in which air can collect, the circulation will be retarded and may be even entirely stopped for a moment. The consequent overheating of the water in the water front, when the range is hard driven, will produce a bubble of steam which will drive out the obstruction, and after coming in contact with the cooler water will condense suddenly. The vacuum thus formed will be immediately filled from both sides by the water producing a pounding, clattering noise.

The noise caused by partially clogged and corroded range connections and water front should be unmistakable and should be attended to at once. While the pipes are disconnected the water front should be tapped with a hammer to loosen any dirt which may cling to the inside of the casting, and the force pump should be applied to the upper connection until the water front is washed clean.

In many cities it is forbidden by the sanitary authorities to connect the boiler drain with the drainage system directly, and the arguments advanced are quite plausible. As any one who has taken down old range boilers knows, the interior becomes coated with large warts of rust, which easily crush under slight pressure of the finger. In case the stop cock connecting with the drain were left open foul air from the drainage system could pass freely into the boiler, tainting the entire interior surface. An evident advantage of the plain draw off faucet is that the condition of the water in the bottom of the boiler may be seen at a glance, and servants are more likely to take an interest in attending regularly to its cleansing. In substituting new connections for the old ones it should be the aim of the plumber to improve the arrangement of the piping as much as possible rather than to follow the beaten path of the man who made the connections previously. A more thorough knowledge of the principles involved, and an independence and openness of mind are thereby cultivated, the value of which will increase somewhat after the manner of money out at compound interest.

fortunate in the possession of a competent, courageous and generously disposed plumbing inspector, John Hopkins, who has started a vigorous crusade against those who offend against the regulations. Several offenders have recently been fined for their infringements.

## THE PLUMBING AND STEAM SUPPLY LEAGUE.

A meeting of the officers of the Plumbing and Steam Supply League was held at the Monarch Palace Alleys, Twenty-sixth street and Sixth avenue, New York, last Saturday afternoon, to arrange for the bowling tournament for the coming season. President Martin Behrer presided and ex-Secretary Rollin C. Wilson acted as secretary. Among those present were Treasurer Fred. Lowe, Captain W. S. Emery, William Murray, George Robinson, Louis Labiaux, William Carter and J. Walsh. The report showed that 24 teams had paid the entrance fee and met the qualifications to become members of the league. In consequence the rules were changed so that players qualifying to win the individual prizes must bowl not less than 14 games.

The teams entered are as follows:

*The Metal Worker*, the *Plumbers' Trade Journal*.

Manufacturers: H. P. Read Lead Works; National Lead Company; F. N. Du Bois & Co., No. 1; F. N. Du Bois Company, No. 2; John Simmons Company, No. 1; John Simmons Company, No. 2; Ashcroft Mfg. Company; Fred. Adey & Co.; Ronalds & Johnson Company, New York; Ronalds & Johnson Company, Brooklyn; Central Foundry Company, E. S. Wheeler & Co., Dimock & Fink Company and John A. Murray.

Salesmen: Jenkins Brothers, Behrer & Co., Colwell Lead Company, E. F. Keating, Lalance & Grosjean Mfg. Company and Crane Company.

In addition to the prizes offered by the league a number of prizes have been given by different concerns. The officers made the conditions under which they are to be contested for and prepared the following list:

#### TEAM PRIZES.

A handsome silver cup is given by the *Plumbers' Trade Journal* to the team winning the tournament, to become the property of the team winning it three times in succession. The league gives ten prizes, ranging from \$30 to the winning team to \$5 to the team finishing in the tenth place; also a prize of \$5 for the highest team score.

*Domestic Engineering* gives a half page of advertising for one year to the team making the highest average.

#### INDIVIDUAL PRIZES.

*The Metal Worker* offers a handsome fob chain to the member of the league who makes the smallest percentage of breaks. The American Porcelain Company offer two prizes, one to the individual making the best average in the tournament, the prize to have a value of \$15, and another to the member making the second best average, to have a value of \$10. The league offers three other prizes, of \$5, \$3 and \$2, for the members making the third, fourth and fifth best average. The league also offers a prize of \$5 for the member making the greatest number of spares during the tournament and a prize of \$3 to the member making the highest score.

A glance at the prize list and the list of houses represented in the league gives evidence that there is ample incentive for high class bowling and that the contests will not lack in interest. The officers are to be congratulated on the success of their efforts to again bring together so many representatives of the trade under social conditions that cannot but result in the establishment of confidence, which is always beneficial, among those who must do business either with or in competition with each other. Those who are familiar with the social spirit that was developed during last winter, and which culminated in the most enjoyable meeting of all the members at the closing dinner, when the prizes were distributed, look forward with no small amount of pleasure to the contests on the bowling alleys this winter.

The tournament will open on Monday night, September 29, when President Behrer and his team will meet the teams of *The Metal Worker* and the *Plumbers' Trade Journal*. The printed schedule is being prepared, and will be issued to the members at an early date.

MEMPHIS, TENN., is having the usual outcry and trouble that attend the enforcement of a modern set of plumbing regulations in a city where in the past the plumbing has been done in accordance with the ideas of the contracting plumber. The city, however, is for-



## THE EASTERN TRADE GOLF TOURNAMENT PRIZES.

Having given in the last issue of *The Metal Worker* an account of the first tournament of the Eastern Trade Golf Association, we now present a picture of

by E. C. Molby. To the right of this is the cup presented by the *Engineering Review* for the second prize for medal play, which was won by Frank H. Simmons. At the left again, on the back row, is shown the tall cup presented by the *Plumbers' Trade Journal* for the third class, which was won by Harry S. Martin. Beside it is the



*The Eastern Trade Golf Association Prizes.—Fig. 1.—The Group Picture.*

the different trophies, which it was impossible to get at that time. Photographs of the different cups have now been taken, however, and we present in Fig. 1 a group of the various trophies.

In the first row, on the left, is the cup presented by the president, C. H. Simmons, for the best medal play, which was won by W. H. Thayer of Boston, Mass. Be-

side it is a smaller cup presented by Bruce & Cook, for the runner up in the first class, which was also won by Mr. Thayer. The central cup is the association challenge cup, which must be won three times to become the property of the winner. This formed the first prize in the first class and was won by P. R. Jennings. At the right of it is the stein given by the association to the winner of the driving contest, which was captured

silver cup given by *The Metal Worker* for the fourth class and won by Howard W. Walton. The bronze figure in the center, which was presented by W. A. Russell & Co. for the best score for the first 18 holes, to be contested for by both Eastern and Western players, was won by Charles K. Foster. At the right of this bronze figure is the cup presented by



*Fig. 2.—The Metal Worker Cup, Won by Howard W. Walton.*

side it is a smaller cup presented by Bruce & Cook, for the runner up in the first class, which was also won by Mr. Thayer. The central cup is the association challenge cup, which must be won three times to become the property of the winner. This formed the first prize in the first class and was won by P. R. Jennings. At the right of it is the stein given by the association to the winner of the driving contest, which was captured



*Fig. 3.—The Domestic Engineering Cup, Won by Frank B. Barrett.*

*Domestic Engineering* for the third prize for medal playing and won by Frank B. Barrett. At the extreme right is the Pierce cup, given by the Pierce, Butler & Pierce Mfg. Company, and won by Frank C. McLain. In the back row are three pewter mugs, given by the association for the runner up in the different classes. These were "lifted" by A. W. Maine, Jr., for the second class,



Howard Hovey for the third class and P. H. Seward for the fourth class.

A strange coincidence developed in the selection of the prizes, *Domestic Engineering* buying in Chicago an exact duplicate of the cup purchased by *The Metal Worker* in New York City. As Editor Allen has traveled



Fig. 4.—The Plumbers' Trade Journal Cup, Won by Harry S. Martin.

abroad it is to be presumed that he possesses a cultivated taste, which reflects credit upon the scribe of *The Metal Worker* who selected an exactly similar cup, the same in size, design and weight as that which pleased Mr. Allen's fancy. An enlarged view is given in Fig. 2 of the twin presented by *The Metal Worker* and won by Howard W. Walton. The picture given in Fig. 3 was



Fig. 5.—The Engineering Review Cup, Won by Frank H. Simmons.

prepared by *Domestic Engineering* and shows the other twin cup won by Frank B. Barrett. The beautiful vase shaped cup presented by the *Plumbers' Trade Journal* and won by Harry S. Martin is shown in Fig. 4. The handsome cup shown in Fig. 5 was presented by the *Engineering Review* and won by Frank H. Simmons.

The Pierce cup, shown in Fig. 6, presented by the Pierce, Butler & Pierce Mfg. Company, was won by Frank C. McLain.

The scores presented in the last issue of *The Metal Worker* give evidence that good golf was played, and now that pictures of the different trophies can be seen it will be evident that there was ample incentive for every player to do his best. In view of the beauty of the trophies it is not surprising that enthusiasm was developed to the point that arrangements for a team contest between the East and West, for a punch bowl set offered by Charles K. Foster in behalf of the American Radiator Company, are well in hand. An attempt will be made to arrange this contest to come off in October. Evidently the Eastern Trade Golf Association and the Western Trade Golf Association are accomplishing

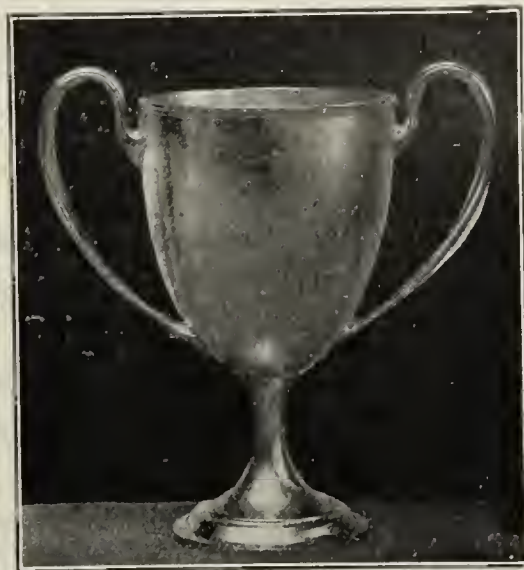


Fig. 6.—The Pierce Cup, Won by Frank C. McLain.

the objects of their organization when so many members of the trade are brought together under such pleasant circumstances and when the movement leads to such a generous spirit as is manifested in the prizes already given and won and to the contemplated contests of the future.

### MASSACHUSETTS MASTER PLUMBERS.

The quarterly meeting of the Massachusetts Master Plumbers' Association was held September 12 at Edgemere Park, Lake Quinsigamond. Nearly 200 members of the organization were present, including a large number from Boston, Holyoke, Haverhill and other cities of the State. The visitors were met at the station by a delegation from Worcester consisting of O. S. Kendall, John W. Green and J. C. Luby.

The party went to Edgemere on special cars over the Lake Shore line. On arriving at the grounds a light lunch was immediately served, after which the Worcester men entertained the visitors and showed them the many attractions of Edgemere. At 12.30 o'clock a clam dinner was served at the hotel.

After dinner an impromptu set of athletic games was held which furnished plenty of amusement for all. At 4.15 o'clock the entire party left the park and were the guests of the Callahan Supply Company in a trolley ride to the points of interest in the city under the supervision of Mr. Callahan. This proved the most enjoyable feature of the afternoon for the visitors.

The following committee had charge of arrangements: O. S. Kendall, J. W. Green, J. C. Luby, M. B. Holmes, J. P. J. Cahill, Charles Campbell and William Cahill.

THE DUPLEX HOT WATER HEATER COMPANY will move their manufacturing plant from Vermillion to Lorain, Ohio. A. H. Babcock, Jr., F. C. Whitlock and other Lorain capitalists have purchased a controlling interest in the enterprise and intend to build a new factory.



## PLUMBERS' SUPPLY ASSOCIATION.

The meeting of the Association of Manufacturers and Jobbers of Plumbers' Supplies at the Arena, New York City, last week, while largely devoted to the discussion of details of business of interest to the members, was also the annual meeting for the election of officers, and Frank J. Knox was unanimously re-elected president. The officers elected for the ensuing year are as follows:

*President*, Frank J. Knox, Hartford, Conn.

*First Vice-President*, Frank A. Buckman, New York.

*Second Vice-President*, W. H. Fleck, Philadelphia, Pa.

*Treasurer*, William McShane, Baltimore, Md.

*Secretary*, C. W. Woodward, Home Life Building, New York.

*Advisory Board*: Emery F. Souther, Boston; T. A. Calahan, Worcester, Mass.; John Reid, New York; John S. Hoy, Albany, N. Y.; A. P. Fell, Buffalo, N. Y., and John McPhail, Baltimore.

*Representatives on the National Committee*: Frank J. Knox, John H. Mueller, John McPhail, George T. Coppins and H. H. Fleck.

## Plumbers' Marble Manufacturers Meet.

The National Association of Manufacturers of Plumbers' Marble met at Hotel Carrollton, Baltimore, Md., on September 8, and held a short business session behind closed doors. The meeting was devoted to an exchange of views on matters pertaining to the trade. Among those present were William Buess and Joseph Kurlist, New York; F. J. Lantz, Buffalo, N. Y.; W. E. Higby, Proctor, Vt.; M. R. Brown, Rutland, Vt.; W. B. McMullan, Knoxville, Tenn.; J. F. Jacoby and Peter Gray, Philadelphia; T. W. O'Brien, Detroit, Mich.; H. C. Tibbitts and R. C. McDonald, Cincinnati, Ohio; Theodore Ahrens, Louisville, Ky., and John R. Hugg and C. L. Hilgartner, Baltimore, Md. At the close of the session those present accepted the invitation of N. H. Evans to make a short trip down the bay on his yacht, inspecting the harbor and the historic points, Fort McHenry and Federal Hill. Luncheon was served on the yacht. The next meeting of the association will be held at Knoxville, Tenn. The officers of the association are:

*President*, W. E. Higby, Proctor, Vt.

*Vice-President*, John Mueller, Cincinnati, Ohio.

*Secretary and Treasurer*, John R. Hugg, Baltimore.

## New York City Notes

The many friends of Isaac O. Shumway sympathize with him in the loss of his son, James Shumway, who died last Sunday from an attack of appendicitis. The funeral services were held on Wednesday and were largely attended by his friends in the plumbing trade.

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The Bronx Sewer Department has lately adopted a rule that the plumber applying for permits must show that he is registered in the Bureau of Buildings, and, in case of a new sewer, that the plan for the same has been approved.

\*\*\*

Manhattan Branch is getting in many new members on the possibility that the initiation fee will be increased to \$50 after October 15.

\*\*\*

John McGrath is busy with five private houses on Seventy-seventh street, opposite the Museum of Natural History, and a bonded warehouse on South street, near Burling slip.

\*\*\*

T. J. Byrnes is just starting work in the new Y. M. C. A. Building on West Twenty-third street running through to Twenty-fourth street, between Seventh and Eighth avenues. The plans for this building include complete physical apparatus, such as swimming tank, shower and needle baths, &c.

\*\*\*

Timothy F. Seannell has the plumbing contract for a nine-story apartment that is being erected by Philip

Braender of cellar drainer fame, at the corner of Central Park, West and 102d street.

\*\*\*

Among the plumbing jobs well under way are an apartment house, 50 x 85 feet and nine stories high, on Seventh avenue near 112th street, which is being done by S. Nechameus; a tenement on 101st street, near First avenue, by Charles Hensle; an apartment on 115th street, west of Lenox avenue, by Jos. Bloch, and an apartment on Seventy-seventh street east of Columbus avenue, by Poletcheck & Spencer.

\*\*\*

In the primary elections this week Plumbers Mat F. Donohue and P. J. Ryder were able to keep the Democratic leadership of the Twenty-first and Third Assembly districts respectively, Superintendent of Highways J. G. Collins aspired to lead the Thirty-third District, but was defeated.

## The Late "Boss" Shepherd.

The death at Batopilas, Mexico, on September 12, of Alexander R. Shepherd, formerly well known as "Boss" Shepherd, when Governor of the District of Columbia, removes a once very prominent figure of the national capital. Mr. Shepherd, who was born in Washington in 1835, started in life in that city as a plumber and built up a successful business in that trade, which he relinquished upon taking office as vice-president of the Board of Public Works of the District of Columbia. During his tenure of office, and afterward as Governor of the District, he initiated very extensive improvements in the city, but spent such immense sums upon them that he earned for himself great unpopularity and, as a consequence, the form of government of the district was changed from a territorial form to that at present prevailing, the Governor being succeeded by three commissioners. When President Grant appointed Shepherd as one of the commissioners the Senate refused to confirm him, and he returned to his plumbing business, but was subsequently forced into bankruptcy. In 1880 Mr. Shepherd went to Mexico, where he was fortunate in developing one of the greatest silver mines on the continent. Since that time his energies had been expended in working the mineral riches of Batopilas, where he made his permanent residence. As time passed the citizens of Washington awakened to a full appreciation of the great work which he had done in transforming their city from a mud hole into one of the beauty spots of the world, and when he returned for a brief visit a few years since he received an ovation.

## Steam and Hydraulic Valves, Fittings and Pipe.

The Crane Company, whose factories and headquarters are in Chicago, with branches in the leading cities of the country, have issued a complete pocket catalogue of the products which they manufacture, comprising 464 pages. This exceedingly convenient volume presents illustrations, price-lists and full detailed information relative to all their standard goods, such as globe, angle, check and cross valves, straightway valves, brass and iron cocks, iron and brass fittings, flanged fittings, engine and boiler trimmings, steam fitters' and engineers' tools, &c.; low pressure and medium pressure goods, such as iron straightway valves and flanged fittings; extra heavy goods, covering iron straightway valves, iron and brass globe, angle and cross valves, screw and flanged iron fittings and pipe bends; hydraulic goods, consisting of iron straightway and check valves, brass straightway globe and check valves and iron and brass fittings. A number of pages are devoted to brass, wrought iron and steel pipe. The catalogue also presents a great deal of data of interest to engineers and practical suggestions to fitters.

The heating system of the Central Building, Brace Memorial, Kensico, N. Y., will be remodeled and a new 1750 foot Steam Boiler will be installed. The new boys' dormitory, now nearing completion, will be heated by a 1250-foot Steam Boiler, both of Henderson Thermo pattern.



## Heating and Plumbing Notes.

THE SANDUSKY BOILER & PLUMBING COMPANY, Sandusky, Ohio, have been awarded the contract for heating and plumbing the new building of the Sandusky Automobile Company.

W. A. T. SMITH, agent for the Kelsey Generator in New Haven, Conn., has taken the contract for installing a battery of Kelsey Heaters in a new residence for W. F. Day. He is also putting in Heaters for Mrs. Gilbert and Mrs. Penney.

THE RICHMOND PLUMBING & MANTEL COMPANY of Richmond, Va., have been awarded the contract, amounting to about \$10,000, for plumbing the entire new six-story office building of the Atlantic Plumbing Company in Norfolk.

CHARLES D. MURRAY, president of the Merchants' National Bank of Dunkirk, N. Y., and a director of the United States Radiator Company, died on September 11, at his home in Dunkirk, aged 71 years.

E. M. OSMUN & SON, Hackettstown, N. J., are installing a 2750-foot Henderson Thermo Steam Boiler in the Methodist Episcopal Church of Hackettstown.

THE PRIESTLY GAS LIGHT COMPANY will establish a factory at Ames, Iowa, for the manufacture of Gas Apparatus and Fixtures.

THE Supervising Architect at Washington, D. C., will receive bids until October 8 for the drainage system and gas fitting of the Post Office, Court House and Public Buildings at Chicago, Ill.

THE Master Plumbers' Association of Philadelphia, Pa., held their regular monthly meeting at the Builders' Exchange on September 11, when George Swyer was appointed business agent for the association. After October 1 Mr. Swyer will have an office in the Builders' Exchange. An application was received from the Journeymen's Association for the appointment of a committee to confer with them on the regulation of apprentices.

CECIL L. SAUNDERS bid \$5546 and secured the contract for installing the boilers of the heating plant in the United States Marine Hospital at Cleveland, Ohio.

THE many friends of Charles A. Criqui, 922 Main street, Buffalo, N. Y., will be glad to learn that the fire in his plumbing establishment last week was extinguished with a comparatively small damage, which was covered by insurance.

ED. MORRIS, secretary of the Detroit Lead Pipe & Sheet Lead Works, Detroit, Mich., was entertained by C. W. Woodward this week, when he came to New York for the purpose of meeting his family, who had been enjoying a vacation abroad.

R. E. HARRIS, Macomb, Ill., has contracts to install two heating boilers for J. W. McIntosh, to put in gas and steam heat in the residence of Ira Sheets, to install a steam heating system in the residence of W. B. McDonough, and to do the heating and plumbing work in the residence of John Bell at Colchester.

THE controversy over the heating and ventilating of the Public School buildings of Buffalo, N. Y., which has been a subject of contention and discussion for some time, apparently is not yet to be dropped. The claim is now being made that the new system which was accepted is much more expensive in first cost than the system which was rejected, and that it does not accomplish the work which the rejected system was guaranteed to do. The new system is also said to require more fuel and supervision. In addition it has no guarantee back of it, and a portion of the buildings are left unventilated, which will add further to the cost of the heating and ventilating plant.

T. E. HULME of Portland, Ore., has turned in the following report of his work for one month: New buildings inspected, 68; old buildings inspected, 64; cesspools connected, 20; sewers connected, 54; written notices served, 34; reports of defective plumbing, 15; plumbing remodeled on notice, 6; total number of visits for the month, 556. Number of licensed plumbers in Portland, 42.

THE McLEOD COMPANY, New York and Chicago, manufacturers of Low Pressure, Standard and Extra Heavy Flanged Fittings, Cast Iron Pipe, &c., announce the completion of their new Flange Fitting and Pipe shop at New Brighton, Staten Island. The shop is equipped with overhead travelers and power derrick and has superior shipping facilities by both rail and water. The company are also increasing the capacity of their Chicago shop.

OIL WELL SUPPLY COMPANY, Pittsburgh, Pa., have issued a price-list, Section A, of Oil Well supplies, covering everything required to drill, equip and operate gas, oil and water wells, including Derrick Rigs, Boilers, Steam and Gas Engines, Drilling and Fishing Tools, Cables, Drive Pipe, Casing, Tubing, Line and Steam Pipe, Pumps, Sucker Rods, Fittings, &c.

THE AMERICAN RADIATOR COMPANY have added another floor to their building at the corner of Lake and Dearborn streets, Chicago, making the building six stories in height. They have removed the filing, invoicing, purchasing and advertising departments from the second to the sixth floor. These departments have grown so that more floor space was necessary.

WELLINGTON & MILLER, 167 Stratford avenue, Bridgeport, Conn., have contracted to install Ideal Boilers in the residence of George Prindle and in the Frack House at Seaside Park, owned by Dr. J. C. Lynch. They are also remodeling the steam plant in the Atlantic Hotel and the factory of the Bradley-Smith Company, New Haven, Conn., and are installing the heating plant and doing the steam fitting in the establishment of the Connecticut Abattoir & Oil Company.

THE COLORADO SPRINGS ELECTRICAL COMPANY, Colorado Springs, Col., have received the contract for heating and lighting the new County Court House. They will lay steam pipes to connect with the heating system in the building. Their contract is for heating the building to a temperature of 70 degrees between September 15 and June 1 of each year, for a term of five years. The contract price is 40 cents for 1000 pounds of water condensed, which will mean an expenditure of about \$2000 a year for heating the building.

THE PRIZER-PAINTER STOVE & HEATER COMPANY, Reading, Pa., and 160 Fifth avenue, New York, are sending out a little card showing a broken view of the Henderson Orbis Boiler, from which a good idea of the fire and water travel can be gained. These Boilers are round in form and rated to carry 900 feet of direct hot water radiation. The card presents enough information to interest the recipient in securing the catalogue of the company, with fuller particulars in reference to the Boiler.

THE GURNEY HEATER MFG. COMPANY, Boston, Mass., are sending to the trade an eight-page circular, 11 x 9 inches in size, devoted to the Gurney Bright Idea Sectional Safety Water Tube Steam and Hot Water Boilers. This size of page gives the company ample opportunity to show, by means of large broken views and special cuts, the internal construction and arrangement of the Boilers and their surfaces. These are so constructed that they afford little space for the accumulation of soot or other matter which will impede the transmission of the heat of the gases to the water or steam in the chamber. These Boilers are made in a variety of sizes, especially adapted for heavy duty, the largest sized Boiler being rated to carry 7250 square feet of direct steam radiation, or 12,000 square feet of direct hot water radiation. The circular will be of interest to those who are doing large work.

THE AMERICAN SLATE COMPANY, INCORPORATED, 1 Somerset street, Boston, Mass., announce that they have leased a store house and shop at 27 Bowker street, off Sudbury, where they propose carrying a stock of standard sizes of Laundry Trays, Kitchen Sinks, Shelves, Drain Boards, &c., for hurry orders. The company also have a stock of Slate Slabs of all grades, and skilled mechanics to do small work and rush orders at the above location. They add that their quarry facilities are better than ever and that they can make quick deliveries of quarry shipments. The concern are distributing



small blotters calling attention to their Sanitary Slate, Electrical Slate and Roofing Slate and Supplies.

#### New Firms and Changes.

JACOB DANKLEMAN, Chester, Pa., has recently started in the plumbing business at 43 East Tenth street, that city.

THE HARRISON VAPOR HEATING COMPANY of Portland, Maine, have been incorporated, with a capital stock of \$250,000, for the manufacture and sale of Vapor Heating Appliances and Generators. M. K. Teuney is the president of the company and P. J. Heudersou treasurer.

THE announcement is made that the firm of Rubenstein & Schulman, general and plumbing contractors, at 552 Grand street, New York, were dissolved on September 8 by mutual consent. Nathan Rubenstein continues the business of the late firm at the above address. He will also continue to manufacture the N. R. Patent Seat Attachment.

H. F. SHAW, Belchertown, Mass., has bought out the plumbing and tinsmithing stock of E. F. Hall & Son.

THE UNION BRASS WORKS COMPANY have been incorporated at Augusta, Maine, with a capital of \$100,000 for the purpose of making and selling the Soderlund Combination Faucet and Fixtures to same. The officers are: President, G. A. Soderlund; treasurer, C. E. Bowens of Somerville, Mass.

STEWART & ROMAINE MFG. COMPANY, Philadelphia, Pa., have bought out the business of the Philadelphia Expansion Bolt Works, and in future the latter plant will be known as the Philadelphia Expansion Bolt Works, Stewart & Romaine, proprietors. This gives the old concern of Stewart & Romaine Mfg. Company a much more extended list of expansions and designs in Expansion Bolts, making them exceptionally large producers of these goods. The company advise us that their past year's business has doubled that of any previous year, and that their foreign demand has increased to such an extent that they have two foreign agents to whom they make shipments every month.

THE BOSTON ELECTRIC FAN & HEATING COMPANY of New York City have been incorporated under the laws of the State of Delaware, with a capital of \$325,000.

CHARLES W. CLAPP, George W. Birchell and Joseph M. Justen of Toledo, Ohio, are interested in the organization of a company for the manufacture of a sanitary device invented by Mr. Justen.

THE YPSILANTI LUBRICATOR COMPANY, Ann Arbor, Mich., lately filed articles of incorporation, the capital stock being placed at \$10,000. The shares are divided as follows: Charles Glover, 520; Elijah McCoy, 230; Henry P. Glover, 125; Fred. C. Andrews, 125.

#### To Cement Porcelain Letters to Glass.

The following directions for cementing porcelain letters to glass are given in the *Show Window*: Shake 15 parts of lime in 20 parts of water. Melt 50 parts of caoutchouc and 50 parts of boiled linseed oil together and bring the mixture to a boil. While boiling pour the liquid on the slacked lime little by little under constant stirring. Pass the mixture while still hot through muslin, to remove any possible lumps, and let cool. It takes the cement two days to set completely, but when dry it makes a joint that will resist a great deal of pulling, whether from expansion or contraction.

The White Star steamer "Cedric," recently launched from the Harland & Wolff shipyard at Belfast, Ireland, is claimed to be the biggest ship afloat. While slightly less in length than the "Oceanic" of the same line, the "Cedric" is 4000 tons the heavier of the two and she exceeds her sister vessel, the "Celtic," by 100 tons. The length of the "Cedric" is 700 feet, her beam is 75 feet, her depth 49½ feet, and her gross tonnage 21,000 tons. Her displacement at her load draft will be 37,870 tons. She will have nine decks and accommodations for 3000 passengers and a crew of 350. She will probably be completed to take her place on the Liverpool and New York service late in the autumn.

#### THE TIN PLATE MILLS.

It is estimated by competent authorities in the trade that fully 100 tin plate mills in various parts of the country are at present idle. This idleness has been caused largely by the fact that the American Tin Can Company, who are the largest consumers of coke tin plate, have been obliged to limit their operations on account of the slackness of demand for cans this season. The can company bought liberally last season in anticipation of much larger crops than were produced, consequently they are understood to have carried over a very heavy stock of plates into the present season. But the canning business this season is again smaller than was anticipated, owing to a falling off in the salmon catch and a shortage in some vegetable crops, and the demand for cans has been below the average. Although the canning season is now at its height, it is understood that the stocks of plates already in possession of the American Can Company will be sufficient to cover about all their requirements without placing any more important orders with the American Tin Plate Company, who practically have the monopoly of their custom.

Had the tin plate workers agreed to the proposition of the American Tin Plate Company to accept a reduction of wages on work on tin plates for export, the present dullness of trade would probably have been alleviated. It is calculated that if the tin plate company could secure the business of the exporting packers, amounting to about 1,500,000 boxes annually, they could provide steady work for their mills for ten months out of the year. It is a well-known fact that the present tin plate capacity of the country, if all employed, would produce 15 or 20 per cent. more plates than are required for domestic consumption. Consequently, until either the export tin plate business is secured, or foreign markets are developed for American tin plate, the tin plate mills must remain idle for about one-fourth of the year, or else a proportion of them must be shut down for an indefinite period. In either case the workmen must suffer a serious diminution in their annual wages. In view of these facts it seems that it would have been wise on the part of the Amalgamated Association mill men, in their own interests, to accede to the proposition of the American Tin Plate Company.

MORE than one local lodge of the Amalgamated Association have held meetings lately to reconsider their decision on the wage concession proposition of the American Tin Plate Company, and usually the result has been in favor of granting the concession. It seems to be a case with the Tin Plate mill men of making a choice between evils and accepting that which they consider the lesser of the two. In one case a lodge is understood to have asked the officials of the Amalgamated Association to call a special convention of the association to pass upon the rebate scale question. Should this idea be acted upon it is more than likely that an affirmative vote would be obtained. In cases of this kind a decision to reconsider is almost always tantamount to a reversal of the original decision.

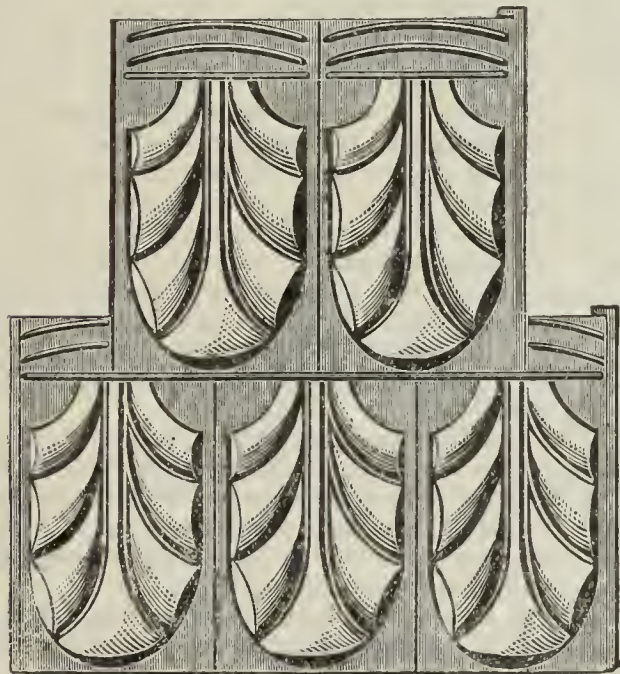
THE GENERAL FIRE PROOFING COMPANY of Youngstown, Ohio, manufacturers of the Herring-bone Expanded Metal Lath, whose plant at Niles, Ohio, recently was destroyed by fire, will start up their new works about September 25. They have been working day and night since the fire getting machinery placed so as to be able to fill the large orders which they have on hand. The Pittsburgh Construction Company of Pittsburgh have the contract for the work, which is being executed according to plans drawn by and under the supervision of Armin Schotte, consulting engineer, of Pittsburgh.

THE AMERICAN SLATE COMPANY, INCORPORATED, 1 Somerset street, Boston, Mass., announce by means of a small blotter that they keep in stock and for sale small quantities of Roofing Slate, Roofing Cement, Roofing Paint, Slaters' Tools, Snow Guards, &c., for repair work. at their shop and storehouse, 27 Bowker street, Boston.



### Moomaw's New Century Shingles.

The Chattanooga Steel Roofing Company, Chattanooga, Tenn., are manufacturing Moomaw's New Century patent shingles, of which an illustration is given herewith. The principal feature of this steel shingle is the embossed center, which gives it a very artistic ap-

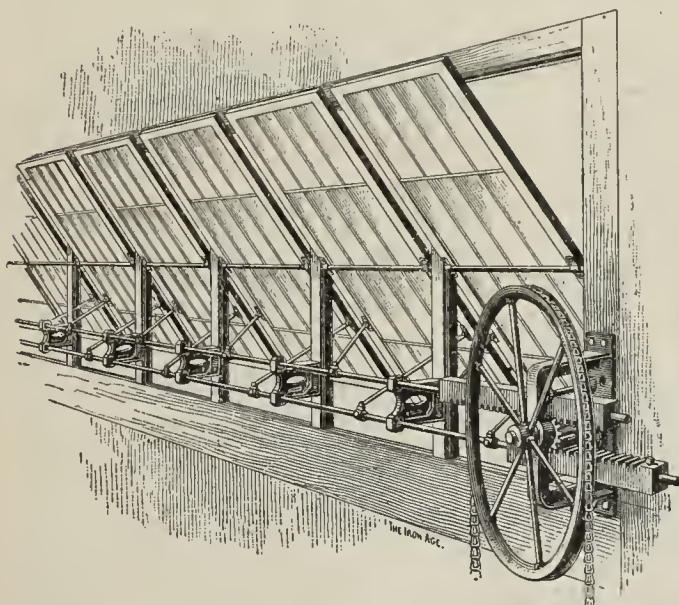


*Moomaw's New Century Shingles.*

pearance. Moreover, the shingle is furnished with a special locking device, which the manufacturers claim makes it absolutely water tight. The shingles are meeting with great favor among architects and builders wherever used, and the makers solicit correspondence from roofers with a view to bringing it to more general notice.

### The Lovell Window and Shutter Operating Device.

The device which has recently been brought out by the G. Drouve Company, Bridgeport, Conn., for operating sashes and shutters is adapted to operat-

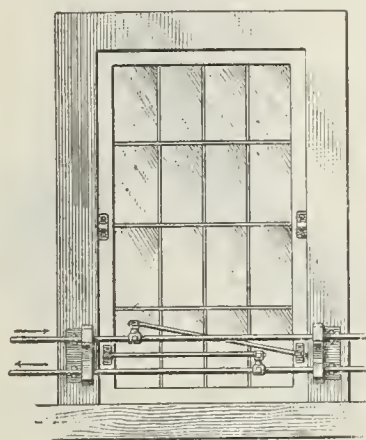


*The Lovell Window Opening Device.—Fig. 1.—The Device Applied to a Row of Windows.*

ing a line of sash 500 feet long from one station, if desired. Illustrations are presented herewith of the device as attached to a line of sash, and of the principal parts which compose it. The apparatus is stated to work equally well with sash hung from the top, pivoted at the sides, pivoted at the top or bottom, or hinged at the bottom. It can also be applied to sliding or ordinary lifting windows. Fig. 1 shows the device as applied to a row of windows. The photograph from which this

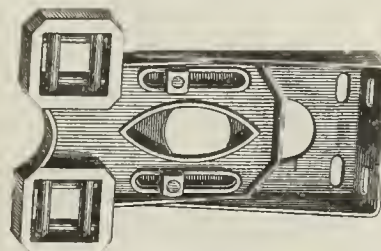
illustration has been made shows a line of 320 feet of sash operated from one station just erected in a Bridgeport factory.

The movements of the sash are effected by two rods actuated by a pinion and rack, so that a turn of the wheel moves one of the rods forward and the other backward. Link arms connect the operating rods to the sash. When the windows are elevated, as for instance in a lantern on the top of a building, a chain passing around the wheel enables it to be easily operated from any point below. Fig. 2 is a front elevation of one of the windows closed, with the link arms attached to the



*Fig. 2.—Front Elevation of One Window Closed.*

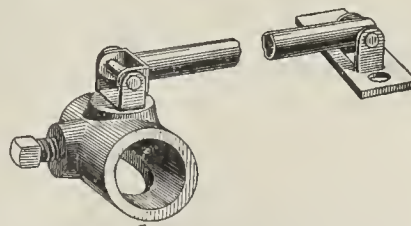
rods and sash. The arrows show the direction in which the operating rods are adapted to move. Fig. 3 represents one of the adjustable hangers for supporting the operating rods. The openings are so arranged that the hanger can be fastened through holes in the foot or in the face to meet the requirements of the position in which it is to be attached. It is constructed in two parts connected at the center by bolts which permit adjustment to a reasonable length. The operating rods pass through the two square openings at the left of the hang-



*Fig. 3.—Adjustable Hanger to Support Operating Rods.*

er and are supported by anti-friction rollers. Fig. 4 shows a broken view of one of the link arms which connect the operating rods to the sash. The forward end of this link arm is pivotally supported to a clip which is swiveled to the sash plate. The other end of the link arm is swiveled on a headed pin, which also pivotally connects the arm link to a clip swiveled on a collar, through which the operating rod passes. The collar is secured to the operating rod by a set screw.

The operating station for an entire building can be



*Fig. 4.—Broken View of Link Arm Connecting Sash Plate with Operating Rod.*

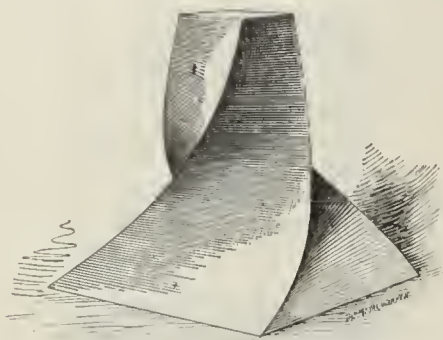
placed on a wall at the end or side of the building. In case of fire the windows can then be quickly closed while the occupants are leaving the building. This is a feature which appeals to the owners of factories and mills. The company have taken contracts for the installation of the apparatus in a number of large buildings both in the East and West.



## Pattern for Twisted Square Shaft of Curved Profile.

**Problem:** Where a square shaft of curved profile is twisted to such an extent that the top plane will make a quarter turn, to draw the plan and elevation of the shaft, also the pattern for its sides.

A correspondent in Baltimore, Md., writes: "I forward to you a small clay model of a twisted square shaft and would be pleased to have you show me



Pattern for Twisted Square Shaft of Curved Profile.—Fig. 1.—View of Correspondent's Model.

through the columns of *The Metal Worker* how to draw the plan and elevation, also the correct pattern shape for one of its sides."

In Fig. 1 is shown a view of the model. It may be well to remark that it is impossible to obtain a strictly true pattern for the shaft. While the pattern shown in

From these intersections parallel to the center line drop lines into the plan and obtain the horizontal sections in plan view, as shown by 1", 2", 3", 4" 5" and 6".

Using these horizontal sections in plan and elevation the twisted plan and elevation will be constructed as follows: From the various heights 1 to 6 in elevation extend the horizontal lines indefinitely, as shown. Now take a tracing of the various sections 1" to 6" in plan and place them in the twisted plan in such positions, gradually turning each plane until the side X of the plane 1" in plan has been turned one-quarter, or 90°, as shown by X in the twisted plan. As five planes are twisted divide 90° by 5, making 18°, the difference in twist given to each plane. In other words, the side of the plane 5 5' should be placed at an angle of 18 degrees to the side of the plane 6 6'. In similar manner the side of the plane 4 4' should be placed at an angle of 18 degrees to 5 5', &c., until all of the planes are in their proper positions, as shown by 5", 4", 3", 2" and 1" in the twisted plan. Then through the corners draw the miter lines 1" 6", 1' 6', 1° 6°, and 1° 6°, which completes the plan view of the twisted shaft.

For the twisted elevation project lines from the various corners of the sections on the miter lines 1" 6", 1' 6', 1° 6' and 1° 6° in plan, intersecting similarly numbered lines in elevation, as shown respectively by 1" to 6", 1' to 6', 1° to 6' and 1° to 6°. A line traced through these points will be the twisted elevation.

The next step is to develop the true length of one of the miter lines, the four being similar. To do this draw any horizontal line, as L M, upon which place the stretchout of the horizontal projection of the miter line 6 5 4 3 2 1 in the twisted plan, as shown by similar numbers on L M. From these points at right angles to L M erect lines intersecting similar lines drawn from

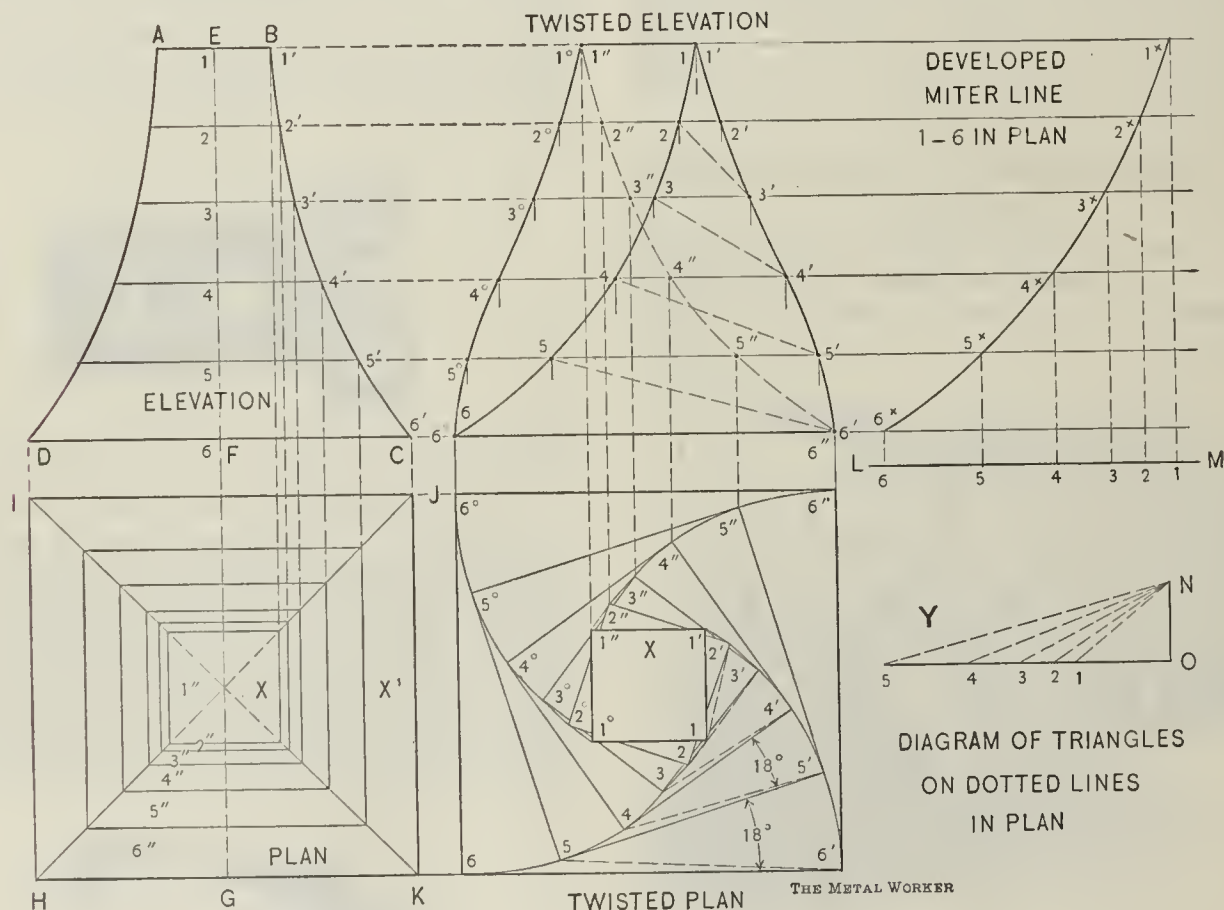


Fig. 2.—Plans, Elevations and Developed Miter Lines and Triangles.

Fig. 3 is geometrically correct, it will, however, require some stretching on its edges to bring it to the required curve and twist.

In Fig. 2 let A B C D represent the elevation of the shaft without the twist, the section on D C being shown in plan by H I J K, and the section on A B in elevation by 1" in plan. Draw the center line through the plan and elevation, as shown by E F G. The curves A D and B C are drawn at pleasure. Now divide E F into an equal number of spaces and draw the horizontal planes 1, 2, 3, 4, 5 and 6, intersecting the curve B C at 1' to 6'.

the points in the elevation, thus obtaining the intersections 1x to 6x, through which trace a line, which will be the developed miter line.

As the pattern will be developed by triangulation a set of triangles must be obtained on dotted lines drawn from 6' to 5, 5' to 4, 4' to 3, 3' to 2 and 2' to 1 in plan, whose altitudes are equal to the vertical heights of the planes in elevation. Draw any horizontal line, as 5 0 in Y, equal to 5 6' in the twisted plan. At right angles to 5 0 draw O N, equal in height to one of the spaces between the vertical planes in elevation. Draw a line



from N to 5 in Y, which is the true length on 6' 5 in plan. In similar manner, as shown in Y, obtain the true lengths of 5' 4', 3, 3' 2 and 2' 1. It should be understood that the solid lines in plan represent the true lengths of the horizontal planes in elevation.

For the pattern proceed as follows: Draw any horizontal line in Fig. 3, as 6' 6', equal to 6' 6' in plan in Fig. 2. Now with 6x 5x in the developed miter line as radius and 6 in Fig. 3 as center describe the arc 5, which intersect by an arc struck from 6' as center and N 5 in Y in Fig. 2 as radius. Now again using 6x 5x in the developed miter line as radius and 6' in Fig. 3 as center describe

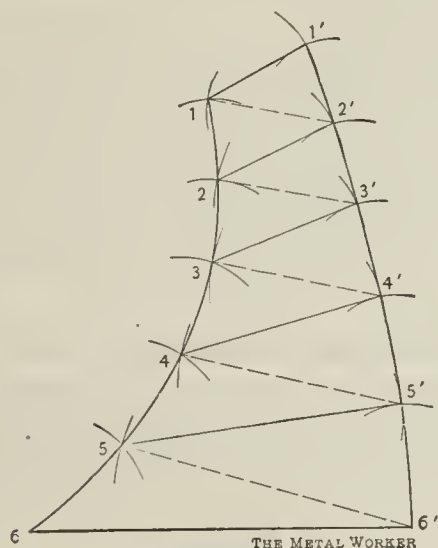


Fig. 3.—The Pattern Shape.

the arc 5', which intersect by an arc struck from 5 as center and 5' 5 in plan in Fig. 2 as radius. Proceed in this manner, using alternately as radii first the divisions in the developed miter line, then the length of the slant lines in the diagram of triangles, then again the length of the divisions in the developed miter line, then the length of the solid lines in plan, until the line 1' 1' in Fig. 3 is obtained. Trace a line through the points thus obtained. Then will 1' 1' 6' 6 be the pattern shape.

If the pattern shown were slightly bent upon the solid and dotted lines, right and left, the pattern would assume the shape shown in Fig. 4. In other words, it would turn from 6' 6' at the bottom a quarter circle and meet 1' 1' at the top. This, however, would show cor-

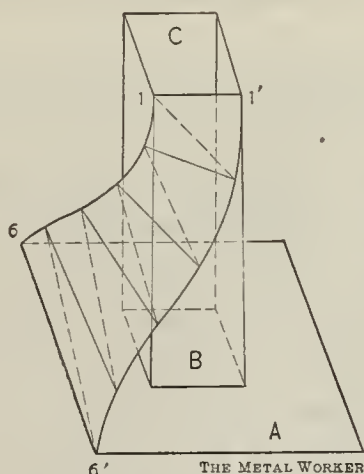


Fig. 4.—Model for Stretching.

ners on the surface, which is not desired, and for that reason, as before explained, the edges will have to be stretched. Before the stretching is done a model should be constructed, as shown in Fig. 4. A represents the size of the bottom of the shaft, in the center of which place a square shaft equal to the height of the twisted shaft and in size equal to its top. Then using the pattern just developed the edges are stretched until the desired curve and twist are obtained. It is then fastened temporarily and the next side stretched to fit the corners 1' 6 and 1' 6'. We would suggest that whatever the size may be the shaft be worked from soft copper, which stretches easily to the desired shape.

## PENNSYLVANIA'S TIN PLATE PRODUCTION IN 1901.

The remarkable increase in the manufacture of tin plate in Pennsylvania since the industry was first given an opportunity is set forth in the following figures from the forthcoming report of James M. Clark, chief of the Bureau of Industrial Statistics, Harrisburg, Pa., for 1901:

The capital invested in the tin plate works in Pennsylvania manufacturing their own black plate was \$10,525,000, an increase over 1900 of \$753,112, and an increase over 1896 of \$6,897,725, or over 190 per cent. The production of black plate in pounds was 435,628,000, an increase over 1900 of 123,626,000 pounds, and an increase over 1896 of 277,321,510 pounds, or over 175 per cent. The total output of tin plate made by the black plate works and the tin plate dipping works combined was 421,640,000 pounds, an increase over the production of 1900 of 123,786,000 pounds, and an increase over 1896 of 282,051,297 pounds, or over 200 per cent. The value of the entire output tinned and untinned was \$17,612,030.

In the black plate tin works 8188 workmen were employed, an increase over 1900 of 794, and an increase over 1896 of 4994 persons, or over 156 per cent. The average yearly earnings, skilled and unskilled, was \$561, an increase over 1900 of \$84, and an increase over 1896 of \$104.45, or 22.9 per cent. The average daily wage, skilled and unskilled, was \$2.46, an increase over 1900 of 6 cents, and an increase over 1896 of 66 cents, or 36.7 per cent.

## The Canonsburg Steel & Iron Works.

The Canonsburg Steel & Iron Works, recently organized at Canonsburg, Pa., have purchased the rolling mill at Canonsburg, Pa., formerly owned and operated by the American Tin Plate Company, and previous to that by the Canonsburg Iron & Steel Company of Pittsburgh, Pa. They are now engaged in improving and repairing the works and expect to have the plant in operation about January 21, 1903. They propose to make steel and iron sheets used for deep drawing, stamping, enameling, tinning, galvanizing, japanning, bicycles, show cards, stove and range work, tune sheets, &c. John F. Budke, formerly connected with the Canonsburg Iron & Steel Company in the capacity of general superintendent of the works, is the president and general manager of the company. The company have a capital of \$250,000, and the officials are: John F. Budke, president; John M. Watson, vice-president; William H. Paxton, treasurer, and George W. Retberg, secretary.

## Webster Aluminum Solder.

Joseph Carl Webster of Philadelphia has been granted a patent on an aluminum solder of his invention, consisting of a mixture of lead, tin, aluminum and zinc. For hard solder used for heavy work these ingredients are combined in the following proportions: 5 parts of tin, 4 parts of lead, 6 parts of aluminum and 1 part of zinc. For small or lighter work the following proportions are used: 6 parts of tin, 5 of lead, 4 of aluminum and 1 of zinc. The inventor claims that the above composition forms an alloy which melts at a considerably lower temperature than the aluminum or parts of metal to be soldered, while no flux or scraping of the aluminum to remove the oxide is required, it being found that the oxide that forms on the aluminum will not affect the joining of the metals when the proper heat is obtained. The usual brazing fire of gas and air to impart a high heat is employed in using this solder. The claim is made that after a joint effected with this solder is cooled and finished it presents the appearance of pure aluminum and will not oxide or tarnish.

THE SHEET STEEL COMPANY, recently organized in Pittsburgh, and who have taken over the Tuscora Steel Company, at Newcomerstown, Ohio, have opened offices in Room 805, Lewis Block, Pittsburgh. The new concern are manufacturers of fine Steel Sheets for special purposes.



## FLASHINGS.

THE GRUSON IRON WORKS of Eddystone, Pa., through their representatives, F. R. Phillips & Sons Company of Philadelphia, Pa., have been awarded a contract for a Tin Plate plant to be erected in Italy. The plant will consist of three hot and four cold mills and all other equipments in American modern mills. F. R. Phillips & Sons Company also have the contract for the Tin machinery in connection with the above. This is the first American contract for Tin mills to go abroad.

THE Logansport Tanners' and Sheet Metal Workers' Association of Logansport, Ind., were organized at a meeting of the local tanners and sheet metal workers held on September 6. The following officers were elected: President, Joseph Fettig; vice-president, William Ensfield; recording secretary, H. Geyer; financial secretary, J. R. Schmock, and treasurer, F. Otto, with G. Mechaffie, J. Fettig and H. Geyer as trustees.

W. S. BULLARD, Bridgeport, Conn., has begun the work of roofing the new building of the American Graphophone Company, in that city, with Plastic Cement. He has also taken the contract for roofing two more buildings for the American Tube & Stamping Company.

STATISTICS published by the *Times* of Seattle, Wash., show that the total salmon pack of Alaska, British Columbia, Puget Sound and the Columbia River region this year amounted to about 3,281,000 cases up to date, as compared with a total pack of 4,549,800 cases in 1901. This indicates that there will be a shortage of about 1,300,000 cases this year as compared with last. This fact will have an important bearing upon the consumption of Tin Plate by the salmon packers of the Northwest this season.

LAWRENCE SANDS AND C. J. HEINZ of Wheeling and E. R. Line of Clarksburg, W. Va., are forming a company to operate Roofing Slate quarries at Martinsburg, W. Va. The promoters expect soon to be making a large output of No. 2 Slate.

THE CLIMAX TIN MFG. COMPANY of Boston, Mass., have been incorporated with a capital stock of \$5000. Charles Rawson is president and treasurer of the concern.

BESEMAN & BOSTWICK, Hartford, Conn., have secured the metal work on the new theater at South Framingham, Mass., and have started on a contract at the Home for Incurables in Newington. They have just completed several Skylights for the Neal, Goff & Inglis Company and a good sized contract for roofing on the residence of Charles Hopkins Clark.

THE REYNOLDS BRANCH of the American Tin Can Company at Havre de Grace, Md., was destroyed by fire on September 16 with a loss of between \$40,000 to \$50,000, partly covered by insurance.

THE NEWPORT ROLLING MILL, Newport, Ky., is reported to be in steady operation in all departments.

THE first six months' business of the Parkersburg Iron & Steel Company, Parkersburg, W. Va., was very pleasing to the stockholders. The new Bar mill was put in operation September 8 and is working splendidly.

EDGAR MURRAY, formerly with the Carnegie Steel Company, at Pittsburgh, has been made purchasing agent of the Youngstown Iron, Sheet & Tube Company, at Youngstown, Ohio.

THE UNITED STATES WORKS of the American Tin Plate Company, at Demmler, Pa., are practically idle. This plant contains 11 Sheet and pair furnaces, 6 annealing furnaces, 11 hot and cold mills, and has a weekly capacity of 7000 boxes of Tin and Terne Plate.

THE CHATTANOOGA STEEL ROOFING COMPANY, Chattanooga, Tenn., are now, as they have been for some time, kept busy in their different lines. They are manufacturing largely Galvanized and Cast Iron for store fronts. They have also a good demand for their Drip-ping Pans and Moomaw's Patent Tin Shingles.

THE NATIONAL WORKS of the American Tin Plate Company, at Monessen, Pa., are being operated to full capacity and have not been affected in any way by the

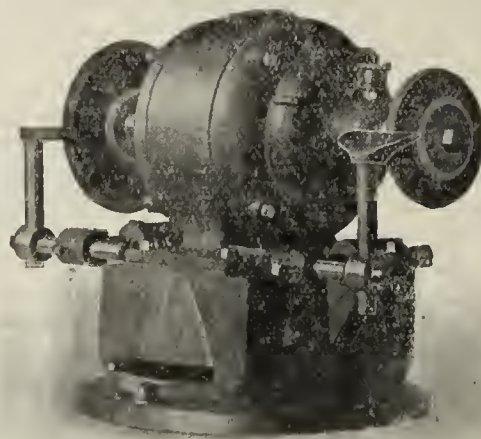
shut down at other Tin Plate plants. The National Works contain 24 Sheet and pair furnaces, 6 annealing furnaces and 24 hot and 18 cold mills. The output of the plant is 50,000 gross tons annually of Black Plate for tinning on triple turn, and 20,000 boxes weekly of Tin and Terne Plate, running double turn. P. E. Donner is manager of this plant.

FEE & MASON, 68 Beekman street, New York, are issuing two little circulars devoted to Pipe Hangers. The F. & M. Extension Pipe Hanger is constructed with grooves on the stem of the Hanger, so that it is capable of an adjustment of about  $3\frac{1}{2}$  inches.

GARA, MCGINLEY & Co., 23 South Seventeenth street, Philadelphia, roofers in Tin, Slate, Tile and Slag and Architectural Sheet Metal workers, are making use of a very striking little circular to draw attention to their business. It is of dark gray paper, ornamented on one side with pictures in red, green and black, and bears on the other side an invitation to call for the services of the firm in examining, repairing or fixing roofs, gutters, spouts, &c. A reply postal card accompanies the folder.

## The Little Badger Electrically Driven Grinder.

The grinder here illustrated is essentially a bench tool, being small enough to be placed anywhere on the tool bench. The base is heavy enough to keep it in position even if not bolted down, although provision is



*The Little Badger Electrically Driven Grinder.*

made for fastening it if desired. The motor is placed between the wheels which are carried by the armature shaft. It is mounted on a swivel base, which allows it to be swung a quarter turn in either direction. This is a desirable feature in that it enables the workman to often obtain a better light on his work and facilitates the grinding of irregular and large pieces. The motors are inclosed, preventing dust, dirt or grit from damaging the commutator, armature or bearings. The tool rests are adjustable, so that either the face or side of the wheel may be used. The bearings are provided with lubricating devices which will last for a long time, and when finally worn out can be quickly replaced. An automatic cut off switch is placed inside the stand. The machine occupies a space 13 7-16 x 18 inches, and is 14 inches high. It is manufactured by the Northern Electrical Mfg. Company of Madison, Wis., the exclusive sales agents being the Mechanical Appliance Company of Milwaukee.

Perhaps no quality is more characteristic of the work of Booker T. Washington than the sanity of his point of view. His article, "Problems in Education," in the September *Cosmopolitan*, deals not only with the work of Tuskegee Institute, but with the educational needs of the entire colored population of the United States. The race problem is not one which can be left to settle itself, and every thinking man or woman should read this valuable contribution to a discussion whose importance will increase rather than decrease in the years to come.



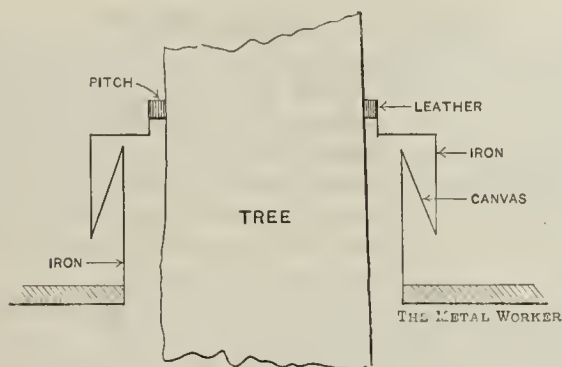
## THE LETTER BOX.

*Inquiries in regard to practical questions of general interest are invited, in reply to which we shall be glad to receive suggestions and information from our readers.*

*Correspondents are requested in all cases to give their names and addresses, which will not, however, be published or disclosed without their consent.*

### A ROOF AROUND A TREE.

From Iron Roofer, Ontario, Canada.—If "J. M." of Washington, D. C., whose communications in regard to a roof around a tree were printed in *The Metal Worker* of August 2 and 23, will flash the tree in the following manner, he will secure a flashing that will be rain proof, snow proof, &c.: Put a strip of iron 8 inches wide around the tree 2 inches away from the tree all around and solder it to the roof. Next make a cylinder 20 inches in diameter and 6 inches deep, this cylinder to be in two halves. Put a flat top on the cylinder, also in two halves. Then cut in the top a hole of the same shape as the tree, at the place where it is to fit around the trunk, but make the hole 1 inch larger all around. Solder a strip 2 inches wide around this hole. Procure a piece of leather 1 inch wide,  $\frac{1}{4}$  inch thick and  $6\frac{1}{2}$  feet long, and wind it around the tree twice, so as to make it  $\frac{1}{2}$  inch thick on the tree, and secure it to the tree with not more than four or five carpet tacks. Then get some canvas and cut it to make a cone 20 inches in diameter at one end and 16 inches at other end and 8 inches deep. Rivet the canvas to the bottom of the two halves of the cylinder and bind the small end of the canvas cone to the top of the strip on the roof, after placing the two halves of the cylinder around the tree. Then secure the hood around the leather, as shown in the sketch herewith,



A Roof Around a Tree.

fastening it with tacks  $\frac{1}{2}$  inch long, and pour some melted pitch onto the leather to cement the iron to the tree.

### THE EFFECT OF INCREASED PRESSURE IN HEATING.

From F. N. P., Norwich, N. Y.—Will *The Metal Worker* kindly answer the following question: If 10 square feet of direct radiation will heat 500 cubic feet of space with steam at 5 pounds pressure, how many square feet of radiation will be required to heat the same space at 20, 30, 40, 50, 60 and 70 pounds steam pressure?

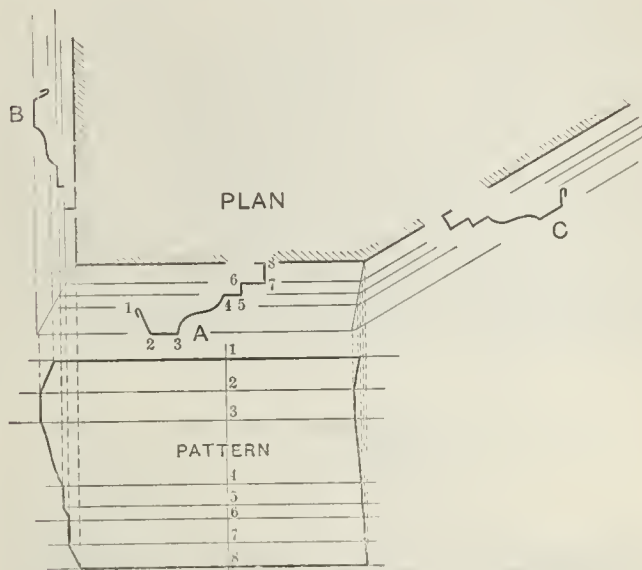
**Answer.**—The heating power of a radiator increases approximately in proportion to the temperature of the steam above zero pressure (212 degrees). From the steam table we find for 5 pounds pressure 228 degrees; 20 pounds, 259 degrees; 30 pounds, 274 degrees; 40 pounds, 287 degrees; 50 pounds, 298 degrees; 60 pounds, 307 degrees; 70 pounds, 316 degrees. The increase of efficiency for each increment of pressure and temperature above 5 pounds will be, approximately, for 20

pounds  $\frac{228}{259} = 0.88 \times 10 = 8.8$  square feet of heating surface, and so on for each increment of higher pressure—

viz.,  $\frac{228}{274} = 0.832 \times 10 = 8.32$  square feet for 30 pounds pressure, 7.95 square feet for 40 pounds, 7.65 square feet for 50 pounds, 7.42 square feet for 60 pounds and 7.21 square feet for 70 pounds steam per square inch.

### CORNICE MITER PATTERNS.

From G. E., New York.—Please inform me through *The Metal Worker* how to cut the patterns for a cornice making a square miter with a cornice of reduced projection, and also how to obtain the patterns of a cornice meeting another cornice of reduced projection at any



Cornice Miter Patterns.

other angle than a right angle, both cornices being horizontal.

**Answer.**—Our correspondent will find it very easy to do this if he first makes his drawing as is shown in the accompanying illustration, in which A is the profile of the main cornice, B the profile of the cornice of reduced projection which makes a square miter with the main cornice, and C the profile of a cornice of reduced projection mitering with the main cornice at some angle other than a right angle. To obtain the pattern for the main cornice draw the stretchout line 1 to 8 perpendicular to the edge of the cornice. On this lay out the distances 1 to 2, 2 to 3, 3 to 4, &c., taken from profile A. Through the points thus obtained draw lines at right angles to the stretchout line. Then from where the numbered points on the profile miter against the other cornices draw lines parallel to the stretchout line, intersecting the numbered lines crossing the stretchout line as shown. Connecting the points thus obtained, the resulting figure will be the pattern of the main cornice. The pattern for the other cornices are obtained in the same manner.

Particular attention is given to the cutting of patterns for cornice miters in "The New Metal Worker Pattern Book," which can be obtained from our Book Department.

### REPAIRS WANTED FOR NEW ENGLAND RANGE.

From O. L. D., Memphis, Tenn.—In reply to the inquiry of "W. L. S." in *The Metal Worker* of September 6, I would say that the range described, bearing the name of New England Range Company, was made by the H. Wetter Mfg. Company, Memphis, Tenn.

From H. B., Niantic, Conn.—In reply to the inquiry of "W. L. S." in *The Metal Worker* of September 6, I would say that John Huse & Son, 95 Blackstone street, Boston, Mass., can furnish repairs for the range made by the New England Stove Company of Taunton, Mass. Repairs can also be furnished by the Taunton Iron Works of Taunton, Mass.

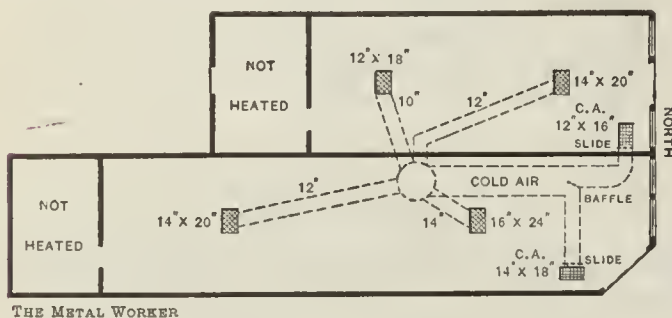
### PROTECTING PARTITION PIPES.

From B. W., Ontario.—I should be glad to have the readers of *The Metal Worker* give their experience as to what makes a proper protection for the tin hot air pipes which run up in partitions from hot air furnaces. When the partitions are of lath and plaster are two coats of asbestos paper sufficient protection from fire, providing no iron lath be used?



### WILL FURNACEMEN HELP?

From Nutmeg, Connecticut.—The sketch submitted herewith, with sizes of registers, pipes and furnace, may be of some service to "A. S.," who makes an inquiry of furnacemen in *The Metal Worker* of August 30. The furnace should not have any less than a 50-inch casing and a 28 or 29 inch fire pot. The two cold air ducts can be made to intersect each other at X and work all right, providing a baffle or division plate is put in at an angle to lessen the friction. The main cold air duct at O must have a total area equal to that of the other two leading from the cold air registers. The registers, both hot and cold air, can be shifted from the places indicated on the sketch, yet it would be well to follow the plan of the sketch to get good results. Of course the cold air registers should have no valves. The heating chambers in the cold air ducts should be placed in the cellar as indicated in the sketch. The hot air pipes can be one size



Will Furnacemen Help?

larger if desired, but I see no need of making them larger than I have designated if the proper size of furnace and good coal are used.

### WANTS INFORMATION ON SOFT COAL BURNING.

From M. K. & H.—We desire to gather certain information in regard to the use of bituminous coal in heaters generally, and in the Kelsey particularly, and with this object in view that we may better enlighten our customers as to the use of soft coal, we ask for answers to the following questions, or such information on the points raised as will help us:

What kind of soft coal do you use?

What kind of soft coal do you recommend?

After the fire is started how often does it require attention?

Do you advise a deep fire or a shallow fire?

Can the fire be carried over night?

If it can, how best, and how do you leave check dampers and draft dampers?

How do you operate the heater in general to get the best results?

Do you find the admission of air above the fire a benefit or not?

How often does the heater require cleaning?

If you have used anthracite coal would you say it requires more or less bituminous coal to do the same work?

Is much stoking of fire required, and if so, below or above the fire?

Have you burned coke, and if so with what results, and how do you regulate the drafts?

Have you mixed coke and bituminous coal, and if so with what result?

Have you mixed coke and anthracite coal, and if so with what result?

How does bituminous coal affect the life of the heater.

What is your opinion in general of bituminous coal as fuel for house heating apparatus?

Do coke or bituminous coal affect the grate if the ashes are properly removed from under the grate?

Answers to the above questions, and any other information relative to the use of soft coal in heating apparatus will be greatly appreciated.

### MAKING A RUST JOINT.

From W. H. P., Haddonfield, N. J.—Will *The Metal Worker* give me the best formula for making a rust joint on a greenhouse hot water heating system, where 4-inch cast iron pipe with bell and spigot ends are used for the heating service?

Answer.—Rust joints in cast iron pipe are made by using iron filings with sal ammoniac or salt water. The iron filings, or turnings, should be not so fine as to resemble dirt, but rather coarser. They should be of soft iron and free from dirt and grease. An experienced greenhouse heating contractor favors the use of iron filings wet down with water that is slightly salt in preference to the use of sal ammoniac. If the water is too salt, or too much sal ammoniac is used, there is a tendency toward the generation of heat, and the expansion of the iron filings is sometimes sufficient to crack the hubs of the pipe. In order to prevent the filings from getting into the inside of the pipe and to hold the spigot end centrally in the hub it is well to calk the joint with oakum before the wet filings are inserted. These should be tamped lightly into place, but not tight enough to cause a cracking of the hub when the expansion, due to the heat generated by the salt, takes place.

Another method of making joints in greenhouse pipes is to use alternate layers of oakum and red lead. The success of this joint depends on the quality of the red lead used. Sometimes Portland cement is used instead of the red lead between the layers of oakum. Joints made in this way will harden sufficiently to stand the circulation of water under a slight pressure inside of 24 hours. With a little experience these joints can be made so that standing over night they will be tight.

### SIZE OF CATALOGUES.

From Brown & Wales, Boston, Mass.—We notice in *The Metal Worker* of August 30 your suggestions in reference to the size of catalogue. We think it a good one, and that it is very desirable to have these publications so that they can be more readily filed. If you could find out what is the most commonly used size we think those who issue catalogues will be glad to adopt a standard size.

Note.—We shall be glad to receive from our readers any suggestions bearing upon this subject. Obviously it would be out of the question for all manufacturers to adopt one standard sized catalogue, as there are some goods which require a large size for their proper illustration. But it would seem perfectly feasible to establish, say, three standard sizes, or possibly four, one of which would be suitable for every class of goods made. It appears that the most popular and at the same time the most convenient size of book is about 6 x 9 inches. With a smaller one of pocket size and a larger one to take in such illustrations as are used by metal ceiling manufacturers, for example, we believe that the advertising necessities of all manufacturers would be covered. There is no doubt that a wide demand exists for the standardization of catalogues, and the time seems ripe for taking up this matter definitely.

### PATTERN FOR A CHIMNEY TOP.

From M. L., Albany, Ore.—In regard to the patent ventilator mentioned by Henry Weyand, Waterbury, Conn., in *The Metal Worker* of August 16, would say that I have seen this ventilator in London, England, in the year 1878, and believe it is patented in that country. Just the same drawing as was given in *The Metal Worker* of August 2 will be found in more than one of the standard technical books on sheet metal work.

### WHO MAKES THE COUCH DAMPER?

From H. E. B., Leominster, Mass.—We shall be glad to learn the name of the manufacturers of the Couch heat deflecting pipe damper. It is a cast iron damper in three sections, and the end of the damper rod has a cast iron hand for a handle.



# TRADE REPORT.

## MARKET SUMMARY.

**Pig Tin** is extremely dull, and about  $\frac{1}{2}$ c. lower in price.

**Copper** is very quiet and weak.

**Pig Lead** is in fair demand, and prices are firm.

**Spelter** is dull, but scarcity of spot makes the market firm.

**Antimony** is quiet and unchanged.

**Nickel** is in fair demand at unchanged prices.

**Aluminum** continues active at former prices.

**Tin Plates** are dull and without change.

**Black Sheets** are in somewhat better demand, with prices, as a rule, unchanged.

**Galvanized Sheets** are dull and somewhat weak.

**Scrap Iron** continues active and firm.

**Foundry Iron** is very scarce, and prices are high and entirely nominal.

**Sheet Copper** continues in fair demand at unchanged prices.

**Sheet Zinc** is moderately active and firm in price.

**Hardware** is moving in good volume, with brisk demand for seasonable goods; prices rule firm.

**Cast Iron Pipe and Fittings** are very firm and in heavy demand.

**Plumbers' Brass Goods** prices have been reaffirmed.

**Sewer Pipe** is very firm and active.

**Solder** has been marked down  $\frac{1}{2}$ c. a lb. on decline in Tin.

**Stoves** have been marked up 5 per cent. in New York.

**Wire Nails** are fairly active and unchanged.

**Cut Nails** are in moderate demand and prices firm.

**Window Glass** is unsettled.

**White Lead** is active and firm.

**Linseed Oil** is weak and about  $\frac{1}{2}$ c. a gallon lower.

**Spirits Turpentine** is strong and 1c. a gallon higher.

**Sash Cord** is up  $\frac{1}{4}$ c. a lb.

## METAL MARKET.

New York, September 19, 1902.

**Pig Tin.**—The market throughout the week has been characterized by a weak and declining tendency. As compared with last week prices are about  $\frac{1}{2}$ c. lower. Business has been very light, consuming interests showing the backwardness which they have manifested for some weeks past. The fact that there is a good deal of spot Tin at present in the market also contributes to the weakness now existing. The depression in the Tin Plate industry, which has caused the closing down of a large proportion of the mill capacity has materially restricted the consumption of Tin during the last few weeks. The market closed weak. Jobbers quote Straits Pig in small lots at  $27\frac{1}{2}$ c. to 28c. per lb. Shipments from the Straits this month have been very large, amounting to 2650 tons, as against 2070 tons for the corresponding period of last year. Arrivals thus far this month amount to 2419 tons and there are 3114 tons afloat.

**Copper.**—The effects of the "boom" of last week in the Copper market have entirely passed away, and prices have declined steadily, the market now being at about the same point that it was prior to the rise. Offerings are reported to be quite urgent, while buyers are scarce. A marked weakness characterized the market at the close. Purchasing was almost exclusively of the hand to mouth order and of small quantities. Lake Ingot in small lots is quoted at about  $12\frac{1}{2}$ c. to  $12\frac{3}{4}$ c. per lb., and casing Copper  $12\frac{1}{4}$ c. to  $12\frac{3}{8}$ c.

**Sheet Copper.**—A fair demand is noted in this department, with satisfactory volume of inquiry. Prices are unchanged on the basis of 18c. per lb. for Sheet Copper from store.

**Pig Lead.**—Little change is noted in the situation of this metal. Prices are firm at the level maintained for

some time past, and rather more activity in buying has been developed in the past few days. American Pig in small lots is quoted at 4.45c. to  $4\frac{1}{2}$ c. per lb. St. Louis advices are to the effect that the Pig Lead market continues its quiet course, with no new or important features, prices continuing on the old basis.

**Spelter.**—Prices are unchanged and firm for spot metal, which is still scarce. The demand, however, is referred to as extremely light, most consumers being pretty well supplied. Jobbers quote good Western brands in small lots at  $6\frac{1}{2}$ c. to  $6\frac{3}{4}$ c. per lb. St. Louis advices report a better feeling in the Spelter market at that point, with demand and prices showing an advancing tendency.

**Sheet Zinc.**—The demand for Sheet Zinc is of the usual proportions. Prices are firm and unchanged at  $6\frac{3}{4}$ c. per lb. for 600-lb. cask lots, and  $7\frac{1}{4}$ c. to  $7\frac{1}{2}$ c. for smaller quantities.

**Antimony.**—No change is noted in this metal. Cookson's in small lots is selling at 10c. to  $10\frac{1}{4}$ c. per lb., Hallett's at  $8\frac{3}{4}$ c. to  $8\frac{1}{2}$ c. and U. S. at  $8\frac{1}{4}$ c. to  $8\frac{1}{2}$ c.

**Nickel.**—Is unchanged. Small lots rule at about 55c. to 60c. per lb.

**Aluminum.**—The demand for Aluminum is referred to as good and prices are without change. Small lots of No. 1 Ingot, guaranteed 99 per cent. pure, are quoted at 37c. per lb. and 100-lb. lots at 35c.

**Tin Plates.**—The market is dull and uninteresting, with an absence of any important buying. The retail trade also seems to have lost the snap of last week and was of quite moderate proportions. Notwithstanding the restriction of production caused by the closing down of a large proportion of the Tin Plate mills, stocks on hand seem to be more than sufficient to meet the present requirements of consumers. The fact that the canning demand is considerably below expectations accounts largely for this condition of things. The American Tin Plate Company are still quoting up to December 1 on the basis ruling for more than a year past. Jobbers' prices show no change. American Bessemer Coke Plates I C, 14 x 20, in moderate sized lots, delivered at New York or corresponding points, rule at about \$4.65 to \$4.85 per box. A decline of  $1\frac{1}{2}$  pence in the price of Welsh Plates took place this week, bringing the price down to 12 shillings  $4\frac{1}{2}$  pence, f.o.b. Swansea.

**Sheets.**—A fair demand for Black Sheets is reported this week, but Galvanized Sheets are dull, and prices somewhat demoralized. Some of the Black Sheet mills are said to be receiving more inquiries, and it is thought that the demand will show considerable improvement from now on. Taken as a whole, the current demand for Sheets is fair, and it is said that a considerable volume of business could be had if manufacturers would shade prices. This is sometimes done on especially attractive orders, but ordinarily quotations are unchanged. Jobbers quote No. 27 One Pass Cold Rolled Soft Steel Sheets in small lots at about 3.60c., and No. 27 Galvanized Sheets is 4.45c. to 4.60c.

Chicago advices are as follows: Manufacturers report an active movement, with prices well sustained for all kinds. The jobbing demand is improving, but offerings are liberal and prices are steady as previously quoted, as follows: No. 27 Black Sheets in small lots from store are offered at 3.25c. to 3.35c., Chicago, and Galvanized Sheets are selling at 4.30c. to 4.40c. for No. 27.

**Old Metals.**—Scrap Iron is in active demand and supplies are not excessive. Consequently prices are stiff. Old Metals of other kinds are moving in fair volume with prices unchanged. Dealers are paying about the following rates for moderate sized lots delivered at New York or corresponding points:

|                              |                            |
|------------------------------|----------------------------|
| Heavy Copper.....            | per lb. $10\frac{1}{2}$ c. |
| Light and Tinned Copper..... | per lb. $9\frac{1}{2}$ c.  |
| Heavy Brass.....             | per lb. $8\frac{1}{2}$ c.  |
| Light Brass.....             | per lb. $6\frac{1}{2}$ c.  |
| Lead .....                   | per lb. $3\frac{3}{4}$ c.  |



|                                        |         |                  |
|----------------------------------------|---------|------------------|
| Tea Lead.....                          | per lb. | 3 c.             |
| Zinc .....                             | per lb. | 3½c.             |
| Pure Aluminum Sheet.....               | per lb. | 22 c.            |
| Cast Aluminum.....                     | per lb. | 17 c.            |
| No. 1 Pewter.....                      | per lb. | 18 c.            |
| No. 2 Pewter.....                      | per lb. | 9 c.             |
| Tin Plate, per gross ton.....          |         | \$5.00           |
| Wrought Iron Scrap, per gross ton..... |         | \$15.00 to 16.00 |
| Heavy Cast Scrap, per gross ton.....   |         | 14.00 to 14.50   |
| Stove Plate Scrap, per gross ton.....  |         | to 15.00         |
| Burnt Iron, per gross ton.....         |         | 8.50 to 9.00     |

### THE PIG IRON MARKET.

NEW YORK.—The principal event of the week has been the purchase by the largest consumer of Pig Iron in the metropolitan district of upward of 10,000 tons of American Foundry Iron for forward delivery at private terms. What business is being done for early delivery is in foreign Pig Iron, and further orders for importation have been placed by dealers. Lately there has been an advancing tendency in ocean freights, which are up about 25c. per ton from Middlesbrough. For delivery in 1903 the following quotations are made: Northern Iron, at tidewater, No. 1 X, \$23.25 to \$24.75; No. 2 X, \$22 to \$22.75; No. 2 Plain, \$21 to \$21.75. Tennessee and Alabama brands, in New York and vicinity, No. 1 Foundry, \$23.25 to \$23.50; No. 2 Foundry, \$22.25 to \$22.50; No. 3 Foundry, \$21.50 to \$22.

CHICAGO.—The arrival of foreign Iron, with larger offerings, both for present and future deliveries, has had a steadying effect upon the market for the domestic product. One effect has been the narrower range quoted between Iron for this and next year's deliveries. A more ample supply of domestic Iron, with a less urgent demand from consumers, has also assisted the tendency referred to. The sale of an increased tonnage of both domestic and foreign Iron for deliveries extending through the first half of 1903 is noted, also more liberal sales for immediate delivery. The sales of Virginia and Tennessee Iron have been entirely Foundry grades, ranging in lots from 100 to 600 tons, delivery extending from January to June next year, on the basis of \$20.50 for No. 1, and \$20 for No. 2, Birmingham. Sales for immediate delivery have been made at \$27.65 for No. 1, and \$27.50 for No. 2. The approximate prices for delivery during the first half of next year are as follows:

|                                             |                    |
|---------------------------------------------|--------------------|
| Lake Superior Charcoal.....                 | \$26.00 to \$27.00 |
| Local Coke Foundry, No. 1.....              | 23.50 to 24.00     |
| Local Coke Foundry, No. 2.....              | 23.00 to 23.50     |
| Local Coke Foundry, No. 3.....              | 22.50 to 23.00     |
| Local Scotch, No. 1.....                    | 24.00 to 24.50     |
| Ohio Strong Softeners, No. 1.....           | 25.50 to 26.50     |
| Southern Silvery, according to Sillean..... | 23.10 to 23.50     |
| Southern Coke, No. 1.....                   | 24.15 to 24.65     |
| Southern Coke, No. 2.....                   | 23.65 to 24.15     |
| Southern Coke, No. 3.....                   | 23.15 to 23.65     |
| Southern Coke, No. 1 Soft.....              | 24.15 to 24.65     |
| Southern Coke, No. 2 Soft.....              | 23.65 to 24.15     |

PHILADELPHIA.—Foreign Iron makes the market at the present time. The supply is sufficient for existing requirements, but there is no great surplus and no pressure to make forward sales. The arrivals are taken from the vessels direct to consumers' yards, and lots afloat are mostly sold before the vessels are reported. American Irons are scarcer than ever. Small lots of No. 2 American Foundry bring about \$23.50, sometimes a little more, depending on circumstances. Makers are pretty well sold ahead, but are not disturbed that buyers are less keen to place orders than they were some time ago. The requirements of consumers are fairly well supplied by foreign Iron, and the domestic product is coming forward as well as ought to be expected, all things considered. As regards next year's business, prices for the first half remain at about \$22.50 for No. 2 Foundry, and about 50c. less for deliveries covering the entire year. Foreign Iron from alongside ship sells at \$20.50 to \$21 for Middlesbro, and Scotch brands sell at from \$22 to \$22.50.

PITTSBURGH.—Some 15,000 to 20,000 tons of foreign Bessemer Iron have been bought for consumption in the Pittsburgh district and other large lots are under negotiation. No. 2 Foundry, for shipment this year, sells at about \$22, at furnace, and \$22.75, Pittsburgh.

CINCINNATI.—No special change has occurred in the Pig Iron market since the last report. But little Iron is being sold, for the reason that little is being offered, and buyers are showing small interest in quotations, except when obliged to forage for an occasional car to piece out some requisition. It is understood that spot Iron,

while no cheaper in price, is nevertheless being offered in quantities calculated to suit very moderate wants. Iron is quotable for spot delivery on the basis of about \$22.50 for No. 2 Foundry, Birmingham, which would make it \$25.75, f.o.b. Cincinnati. There is little or no Iron to sell at this price, however. There is promise that some Southern interests will be in the market after October 1 for Iron for prompt and forward delivery. Foreign Iron has invaded this territory to a very limited extent, but it is not thought likely that much of it will be handled in the Cincinnati market. The Coke situation is strained to the last degree. We quote f.o.b. Cincinnati for 1902 delivery as follows:

|                                |                  |
|--------------------------------|------------------|
| Southern Coke, No. 1.....      | to \$26.25       |
| Southern Coke, No. 2.....      | to 25.75         |
| Southern Coke, No. 3.....      | \$23.50 to 24.50 |
| Southern Coke, No. 4.....      | 21.25 to 22.00   |
| Southern Coke, No. 1 Soft..... | to 26.25         |
| Southern Coke, No. 2 Soft..... | to 25.75         |

### CHICAGO REPORT.

Scrap Iron and Steel.—The market has continued to gather strength under moderate receipts and a good demand from consumers. The tendency of buying prices is upward, and should present conditions hold a further revision of prices will be necessary. The following are the prices paid by dealers in carload lots, Chicago:

|                                                        | Per net ton.       |
|--------------------------------------------------------|--------------------|
| Country Wrought Scrap.....                             | \$16.00 to \$16.50 |
| Machinery Cast.....                                    | 14.50 to 15.00     |
| Malleable Cast.....                                    | 13.00 to 14.00     |
| Stove Plate (free from burnt).....                     | 11.00 to 12.00     |
| Burnt Iron and Grate Bars.....                         | 9.50 to 10.00      |
| Sheet Iron and Hoops.....                              | 10.00 to 10.50     |
| Plow Steel.....                                        | 13.00 to 13.50     |
| Breaking Stock.....                                    | 12.50 to 13.00     |
| Old Boilers—whole (Iron).....                          | 9.50 to 10.00      |
| Old Boilers (Iron) cut in single Sheets and Rings..... | 14.00 to 15.00     |
| Old Gas Pipe and Boiler Tubes.....                     | 13.50 to 14.00     |
| Cast Borings.....                                      | 9.00 to 9.50       |
| Turnings.....                                          | 12.50 to 13.00     |
| Horseshoes.....                                        | 13.50 to 14.00     |

Old Metals.—The advance in Copper and Brass noted a week ago has been well sustained, but the market has been quiet and no further changes are in sight. Zinc and lead continue firm with an upward tendency. The offerings to dealers are only moderate and buying prices in this market are as follows:

|                            | Per lb. |
|----------------------------|---------|
| Copper Wire and Heavy..... | 10½c.   |
| Copper Bottoms.....        | 9½c.    |
| Copper Clips.....          | 10½c.   |
| Red Brass.....             | 10½c.   |
| Yellow Brass.....          | 7½c.    |
| Red Brass Borings.....     | 9½c.    |
| Yellow Brass Borings.....  | 7½c.    |
| Light Brass.....           | 6½c.    |
| Pipe Lead.....             | 3.70c.  |
| Tea Lead.....              | 3.35c.  |
| Zinc.....                  | 3.45c.  |
| Tin Foli.....              | 21 c.   |
| Pewter, No. 1.....         | 18 c.   |
| Pewter, No. 2.....         | 11 c.   |
| Aluminum.....              | 20 c.   |

Old Rubber.—There has been a further hardening of the market with Air Brake Hose higher. Receipts have been on a moderate scale and there is a fair outlet to dealers, who are paying the following prices, Chicago:

|                            | Per net ton. | Per lb. |
|----------------------------|--------------|---------|
| Garden Hose.....           | \$25.00      | .....   |
| Air Brake Hose.....        | 50.00        | .....   |
| Rubber Shoes.....          | .....        | 7 c.    |
| Rubber Car Springs.....    | .....        | 5 c.    |
| Inside Bicycle Tubing..... | .....        | 22 c.   |
| Outside Tubing.....        | .....        | 5 c.    |
| Black Rubber.....          | .....        | 4 c.    |
| White Rubber.....          | .....        | 8½c.    |

Rags.—The market has continued firm in tone, with moderate receipts and a fair outlet. Dealers continue to buy Country Mixed Rags at 75c. to 85c. per 100 lbs., Chicago delivery.

Anthracite Coal.—The little Anthracite Coal available has been sold during the week as high as \$12 a ton on track. The demand, of course, is urgent, but it is almost impossible to give any reliable facts concerning the market. Mine operators and wholesale dealers in this section have no information respecting the probable outcome of the future.

THE P. P. EMORY MFG. COMPANY, Springfield, Mass., coppersmiths, brass founders and machinists, will erect a new plant, 50 x 120 feet, in the rear of their present building. Plans of construction are not yet completed and but little additional machinery will be required.



## THE HARDWARE TRADE.

With the advance of the season and touches of cold weather, giving intimations of the coming winter, there is a decided quickening in the demand for fall and winter goods, and this carries with it a general increase in the volume of business. Orders from the jobbing trade are reported by manufacturers as coming in more freely, but many of them are awaiting receipt of goods purchased some time ago, while there is a good deal of correspondence in regard to delayed shipments, as jobbers are urging the execution of their orders. Stocks in their hands seem in most cases to be sufficient to meet present requirements, but as a result of the steady drain made upon them are likely to be exhausted in some lines before the season is over. Holiday and fancy goods are moving in more than the usual quantities, reflecting the tendency on the part of the trade to broaden out on many lines as well as the general prosperity of the people, which makes a good demand for this class of articles. The difficulty of obtaining raw material still embarrasses manufacturers in many branches. With the full employment of skilled labor, and in many sections a scarcity, manufacturers are not in a position to dispute any reasonable demands for increased wages. The production of the country is keeping up its tremendous pace and the spirit of enterprise which dominates is adding constantly to manufacturing facilities in practically all departments. Competition in lines which have been in large measure controlled by combinations or consolidations is on the whole evidently growing, and the outside manufacturers in an enlarging number of fields have to be reckoned with. Negotiations, with a view to effecting further consolidations in several lines, are in progress, and it is evident that the tendency in this direction has not yet exhausted itself.

## NOTES ON PRICES

**Cast Iron Soil Pipe and Fittings.**—The market for Cast Iron Soil Pipe and Fittings has stiffened up considerably within the past week, and the indications at the present time are that within the next ten days an advance in the prices will be announced. The manufacturers will hold a meeting in New York City during the coming week, and as it is the annual meeting a full attendance of the association members will be present. The demand for Pipe is extraordinary for this time of the year, and manufacturers have labored under many disadvantages owing to the coal situation and the scarcity of raw Iron. No opposition of any importance has developed during the past year and no serious opposition is now in sight. It is rumored that two of the large jobbing houses in New York are proposing to join forces and go in the Pipe and Fittings business to supply the needs of the jobbing branch. If this is so, it will take some time, however, before the proposed concern could affect the market and it would be at least one year before there was sufficient opposition to warrant the members of the association throwing the entire market over.

**Plumbers' Brass Work.**—The manufacturers of Plumbers' Brass Work held a meeting in New York City on the 11th inst., and as a result of the deliberations it was decided that no change would take place in the then ruling prices. The matters of credits, freight regulations and factory and foundry interests were discussed, but these were of interest only to the members of the association and have no bearing whatever upon market conditions. The probability is that prices will remain as they are until the first of the year, when efforts may be made to get several of the independent manufacturers again into the association.

**Sewer Pipe.**—Owing to the amount of building and improvements going on throughout the country, the season has been a very satisfactory one to manufacturers of Sewer Pipe. The demand has been so large that grading a portion of their output as second quality Pipe, for which a reduction in the regular price was made, has been discontinued by some of the manufacturers, but some is still found in the market. The following discounts, such as are given to jobbers, apply to the list

adopted December 19, 1901, and cover standard Pipe and Fittings, 2 to 24 inches in size. Carload lots are generally delivered:

### Sewer Pipe.

|                                               | Discount. |
|-----------------------------------------------|-----------|
| New England.....                              | 70 %      |
| New York and New Jersey.....                  | 73 %      |
| Maryland, Delaware and East Pennsylvania..... | 75 %      |
| West Pennsylvania and West Virginia.....      | 76 %      |
| Virginia .....                                | 78 %      |
| Ohio, Michigan and Kentucky.....              | 78 %      |

**J. C. Paul & Co.**—J. C. Paul & Co., 59 Dearborn street, Chicago, make the following quotations to the trade on their line of Polishes:

### Burnishine, Liquid.

|                        |                            |
|------------------------|----------------------------|
| ½ pint, per doz.....   | \$1.25; per gross, \$12.00 |
| 1 pint, per doz.....   | 2.00; per gross, 19.20     |
| 1 quart, per doz.....  | 3.50; per gross, 33.60     |
| 1 gallon, per doz..... | 9.00                       |

### Burnishine, in Paste Form.

|                         |                        |
|-------------------------|------------------------|
| 3-oz. box, per doz..... | .50; per gross, \$4.50 |
| ½-lb. box, per doz..... | \$1.25                 |
| 1-lb. box, per doz..... | 2.00                   |

### Putz Pomade.

|                         |                        |
|-------------------------|------------------------|
| 3-oz. box, per doz..... | .50; per gross, \$4.50 |
| ½-lb. box, per doz..... | \$1.25                 |
| 1-lb. box, per doz..... | 2.00                   |

### Pride of the Bar Metal Polish.

|                          |                            |
|--------------------------|----------------------------|
| 1-lb. box, per doz.....  | \$1.25; per gross, \$12.00 |
| 4-lb. box, per doz.....  | 3.00                       |
| 12-lb. box, per doz..... | 9.00                       |

**Solder.**—The downward course of the Tin market has caused a decline in the price of Solder. Jobbers are now quoting Half and Half, Guaranteed Solder at 18½ to 19 cents, and No. 1 at 16 to 17½ cents per pound in small quantities.

**Stoves.**—The manufacturers of Stoves selling in the New York market, at a meeting on September 18, advanced the price on all classes of Stoves 5 per cent.

**Wire Nails.**—Small lots of Wire Nails from store are moving in fair quantities. There is an increase in inquiries and orders for carloads. Small lots from store are quoted at \$2.25 to \$2.30, New York.

**Cut Nails.**—There continues to be a scarcity of Cut Nails, particularly in those made from Iron. The demand continues moderate and prices firm, small lots from store, New York, ruling at \$2.30 per keg.

**Glass.**—The Window Glass situation is still in a complicated condition. The Independent Glass Company failed, at their recent meeting, to come to any decision as to their future policy, and another meeting is to be held in a few days, when a decision will, it is expected, be arrived at. The meeting of the National Window Glass Jobbers' Association and of the combined Window Glass manufacturers will be held soon after the meeting of the Independent Glass Company. The Jobbers' Association quotations on Single and Double Strength Glass continue at 88 and 5 per cent. discount for Glass from store.

**White Lead.**—The market for Lead products is active, and the demand for White Lead in Oil is increasing. The outlook is favorable for the use of a large quantity during the fall months. White Lead in Oil from store is sold in moderate sized lots at 6½ to 6¾ cents.

**Linseed Oil.**—The market lacks stability, and the reduction in price on September 8 by manufacturers has created the impression among consumers that prices are likely to go still lower; consequently, they have been holding out of the market to a great extent, although the demand for small lots of Oil is of fair volume. Jobbers quote City Raw in small lots at about 57½ to 58 cents per gallon. The receipts of new Seed exceed those of the corresponding time last year.

**Spirits Turpentine.**—The Turpentine market has strengthened during the week about 1 cent per gallon. Turpentine in small quantities is now quoted at 49 to 49½ cents per gallon. The Southern market is very strong, with a good business reported. During the past season production has been somewhat restricted. Supplies at this point, it is understood, are largely in the hands of one concern, which strengthens the local market.

**Sash Cord.**—The manufacturers of Cotton Sash Cord



have advanced the price of this material  $\frac{1}{4}$  cent a pound.

**Barrett Mfg. Company.**—Under date of September 13 the Barrett Mfg. Company, Chicago, have issued to the trade a new price-list of their Building Papers, Prepared Roofing and Paving Pitch, Tarred Felts and Coal Tar Products.

**The Norton Iron Works,** Ashland, Ky., under date of September 12 announce that they are prepared to ship mixed carloads of their products, including Cut Nails, Wire Nails, Annealed Wire, Galvanized Wire, Cable Wire, Barbed Wire and Staples, at carload prices.

**Central Linseed Oil Company.**—Under date of September 9 the Central Linseed Oil Company, Cleveland, Ohio, sent out a special offer to the trade quoting on all orders for Linseed Oil to be shipped until October 1 at the following prices: Raw Linseed Oil, 54 cents per gallon; Boiled Linseed Oil, 56 cents per gallon, in barrels delivered at the consumers' railroad station. Terms, 30 days, or 2 per cent. discount for cash in ten days.

## TRADE NOTES.

**THE C. C. HOVEY SUPPLY COMPANY,** Bainbridge, N. Y., have been incorporated with a capital stock of \$25,000 to manufacture Tinware and kindred articles.

**THE ORMSBY DUST PAN COMPANY** of Holland, N. Y., have been organized to manufacture a patent Dust Pan invented by John H. Ormsby.

**THE SPRAY WASHING MACHINE & MFG. COMPANY** of Baltimore, Md., have been incorporated with a capital stock of \$50,000 to manufacture Washing Machines and other household articles. H. S. Sohl, W. H. Waddell, W. H. Radcliffe, G. P. Hopkins and H. S. Abendschein are the incorporators.

**JOSEPH HUSE & SON,** 91 Blackstone street, Boston, Mass., have made some changes in the sizes of Sheet Mica used to make up the assortment which they sell for \$5. The sizes are larger than ever before and are those found to be the most salable. The assortment contains 2 pounds and eight sizes, as follows: 2 x 3, 3 x 5 $\frac{1}{2}$ , 1 $\frac{1}{2}$  x 3, 3 x 6 $\frac{1}{2}$ , 4 x 5 $\frac{1}{2}$ , 2 x 5, 4 $\frac{1}{2}$  x 4 $\frac{1}{2}$ , 5 x 5, and there is  $\frac{1}{4}$  pound of each. The quality of Mica is said to be absolutely first class, and is placed in an attractive tin case used for show purposes, which case is sent free.

**G. MATHES' SONS RAG COMPANY,** St. Louis, Mo., dealers in Scrap Iron, Machinery, Metals, Rags and Old Rubber, have recently purchased the property at Broadway, Second and Branch streets, covering an area 400 x 250 feet, and will carry on the Scrap Iron business on a large scale. The company have their own track facilities and are equipped to take care of all the business offered. Their offices and warehouse are at 3120-3130 North Broadway.

The variety of unique advertising cards prepared and sent out by the Grasselli Chemical Company, Cleveland, Ohio, in the interest of their Eureka Soldering Flux, seems to be unlimited. Two new ones that have reached us this week are very striking in design, coloring and general get up and cannot fail to attract the interest and attention of the recipient.

**THE Rod mill** which the Coe Brass Mfg. Company, Ansonia, Conn., purchased some time ago is being rebuilt and put in the same excellent condition as the other departments of the company.

**THE GLASBRITE COMPANY,** 1327 Williamson Building, Cleveland, Ohio, are offering a paste in tin cans for cleaning windows, enameled ware, glass china, crockery, solid silver, nickel and plated surfaces, cut glass, jewelry, marble, &c. Cleaning does not depend upon friction, it is explained, because there is no grit in Glasbrite; also there is no soap in the composition and it does not leave streaks. It is not a scouring substance it is remarked, and is applied with a damp cloth and then rubbed off, leaving the article with its original brilliancy.

**THE D. M. STEWARD MFG. COMPANY** of Chattanooga, Tenn., are introducing a new Crayon for marking on iron. It is of unusual size and in the form of a square stick 1 inch by 5 inches long. The mark it makes is an almost pure white. It is very strong and durable.

**BURCE & COOK,** jobbers and dealers in Tin Plate, Metals and Timmers' and Roofers' Supplies, 186 to 190 Water street, New York, are distributing a list of the stocks of Apollo B. B. Galvanized and Corrugated Steel Sheets, Galvanized Iron Sheets, Wood's Refined Sheets, Soft Steel Sheets, Genuine Russia Iron, American Planished Iron and Polished Steel Sheets; also American Roofing Plates, Cycle Continuous Roofing and Bright Tin Plates of all grades. Special attention is called to the firm's Solder, which they manufacture in several varieties, and a complete list is presented of Timmers' and Roofers' Supplies, Tools and Machines.

**THE E. P. GLEASON MFG. COMPANY,** 181-189 Nassau street, New York, have issued Catalogue S, devoted to Illuminating and Heating Burners, Brackets, Fittings and miscellaneous goods.

The second annual meeting of the American Aluminum Association was held at the Hotel Henry, Pittsburgh, Pa., on Friday, September 19. Among the subjects discussed by the delegates were the extent of the present aluminum industry, its future and the steps that can be taken to eliminate unreasonable competition in the trade. The Pittsburgh Reduction Company arranged to take the delegates to the convention on a visit to one of the principal steel works in Pittsburgh and also entertained the association at a dinner.

The most reliable authorities place the cotton crop of the United States for the current year at about 10,700,000 bales, as compared with 10,425,000 bales in 1901 and 9,440,000 bales in 1900.

| CONTENTS.                                                   |       |
|-------------------------------------------------------------|-------|
| Editorial—                                                  | PAGE. |
| Soft Coal for Heaters.....                                  | 43    |
| Plumbers' Combination.....                                  | 43    |
| Oil Fuel.....                                               | 43    |
| Central Plants for Public Buildings.....                    | 44    |
| The American School of Correspondence.....                  | 44    |
| Stove Prices Advance in New York Market.....                | 45    |
| The Cahoon Anti-Smoke Stoves.....                           | 45    |
| Death of Henry A. Richardson.....                           | 45    |
| Death of Otis H. Burtis.....                                | 45    |
| The Channon-Emery Stove Company.....                        | 45    |
| Michigan Stove Company's Labor Day Display. Illustrated.    | 46    |
| Hard Coal Stoves Not Adapted for Soft Coal.....             | 46    |
| Tribulations of Furnacemen.....                             | 47    |
| The Orient Gas Stove. Illustrated.....                      | 48    |
| Superior Warm Air Furnaces and Utica Heaters.....           | 48    |
| Vulcan Gas Appliances for Heating.....                      | 48    |
| Odd Plates.....                                             | 48    |
| Examinations for Ironmongers' Clerks in England.....        | 49    |
| The Dandy Ice Pick. Illustrated.....                        | 50    |
| The Grimm Sap Spout. Illustrated.....                       | 50    |
| The Improved Henis Boller. Illustrated.....                 | 50    |
| Frame for Holding Twine. Illustrated.....                   | 50    |
| Water Closet Floor Slabs. Illustrated.....                  | 51    |
| The Range Boller and Water Front. Illustrated.....          | 52    |
| The Plumbing and Steam Supply League.....                   | 55    |
| The Eastern Trade Golf Tournament Prizes. Illustrated....   | 56    |
| Massachusetts Master Plumbers.....                          | 57    |
| Plumbers' Supply Association.....                           | 58    |
| Plumbers' Marble Manufacturers Meet.....                    | 58    |
| New York City Notes.....                                    | 58    |
| The Late "Boss" Shepherd.....                               | 58    |
| Steam and Hydraulic Valves, Fittings and Pipe.....          | 58    |
| Heating and Plumbing Notes.....                             | 59    |
| New Firms and Changes.....                                  | 60    |
| To Cement Porcelain Letters to Glass.....                   | 60    |
| The Tin Plate Mills.....                                    | 60    |
| Moomaw's New Century Shingles. Illustrated.....             | 61    |
| The Lovell Window and Shutter Operating Device. Illus....   | 61    |
| Pattern for Twisted Square Shaft of Curved Profile. Illus.. | 62    |
| Pennsylvania's Tin Plate Production in 1901.....            | 63    |
| The Canonsburg Steel & Iron Works.....                      | 63    |
| Webster Aluminum Solder.....                                | 63    |
| Flashings.....                                              | 64    |
| The Little Badger Electrically Driven Grinder. Illustrated. | 64    |
| The Letter Box—                                             |       |
| A Roof Around a Tree. Illustrated.....                      | 65    |
| The Effect of Increased Pressure in Heating.....            | 65    |
| Cornice Miter Patterns. Illustrated.....                    | 65    |
| Repairs Wanted for New England Range.....                   | 65    |
| Protecting Partition Pipes.....                             | 65    |
| Will Furnacemen Help? Illustrated.....                      | 66    |
| Wants Information on Soft Coal Burning.....                 | 66    |
| Making a Rust Joint.....                                    | 66    |
| Size of Catalogues.....                                     | 66    |
| Pattern for a Chimney Top.....                              | 66    |
| Who Makes the Couch Damper?.....                            | 66    |
| Trade Report—                                               |       |
| Market Summary.....                                         | 67    |
| Metal Market.....                                           | 67    |
| The Pig Iron Market.....                                    | 68    |
| Chicago Report.....                                         | 68    |
| The Hardware Trade.....                                     | 69    |
| Notes on Prices.....                                        | 69    |
| Trade Notes.....                                            | 70    |
| Metal and Miscellaneous Prices.....                         | 71    |
| Labor Exchange—                                             |       |
| Help and Situations Wanted.....                             | 75    |



# ROOFING SUPPLIES, METALS, TIN PLATES, &c.

REVISED SEPTEMBER 19, 1902.

|                                                                     |                      |                      |  |
|---------------------------------------------------------------------|----------------------|----------------------|--|
| <b>Aluminum—</b>                                                    |                      |                      |  |
| No. 1 Aluminum (guaranteed over 99% Pure), in ingots for remelting. |                      |                      |  |
| Small lots.....                                                     | lb.                  | 37¢                  |  |
| 100-lb lots.....                                                    | lb.                  | 35¢                  |  |
| <b>Aluminum Sheet, B. &amp; S. gauge.</b>                           |                      |                      |  |
| In lots of 50 lbs or more.                                          |                      |                      |  |
| Wider than.....                                                     | 6-in. 14-in. 24-in.  |                      |  |
| And including.....                                                  | 14-in. 24-in. 30-in. |                      |  |
| Nos. 13 to 19.....                                                  | lb.                  | \$0.42 \$0.44 \$0.47 |  |
| 20.....                                                             | lb.                  | .44 .46 .49          |  |
| 21 to 23.....                                                       | lb.                  | .46 .48 .51          |  |
| 24.....                                                             | lb.                  | .47 .50 .53          |  |
| 25.....                                                             | lb.                  | .47 .51 .54          |  |
| 26.....                                                             | lb.                  | .47 .54 .59          |  |
| 27.....                                                             | lb.                  | .48 .57 .62          |  |
| 28.....                                                             | lb.                  | .48 .57 .64          |  |
| 29.....                                                             | lb.                  | .49 .60 .69          |  |
| 30.....                                                             | lb.                  | .50 .64 .77          |  |
| Note.—Lots of less than 50 lbs of extra.                            |                      |                      |  |

|                  |     |               |  |
|------------------|-----|---------------|--|
| <b>Antimony—</b> |     |               |  |
| Cookson.....     | lb. | 10 @ 10 1/4   |  |
| Hallett's.....   | lb. | 8 3/4 @ 8 3/4 |  |
| U.S.....         | lb. | 8 1/4 @ 8 1/4 |  |

|                                   |  |  |     |
|-----------------------------------|--|--|-----|
| <b>Brass, Roll and Sheet.....</b> |  |  |     |
|                                   |  |  | 30% |

|                                          |  |              |  |
|------------------------------------------|--|--------------|--|
| <b>Conductors—</b>                       |  |              |  |
| <b>Corrugated.</b>                       |  |              |  |
| <b>Round or Square.—</b>                 |  |              |  |
| Galvanized 1/2 or more, Not d.....       |  | 75%          |  |
| Not Nested.....                          |  | 70 & 12 1/2% |  |
| Plain Round, 1/2 or more.....            |  | 75%          |  |
| Nested.....                              |  | 75%          |  |
| Galvanized, Plain Round, Not Nested..... |  | 70 & 12 1/2% |  |

|                               |  |               |  |
|-------------------------------|--|---------------|--|
| <b>Spiral Lock Seam Pipe—</b> |  |               |  |
| Galvanized.....               |  | 60 @ 60 & 10% |  |

|                                                                      |  |     |  |
|----------------------------------------------------------------------|--|-----|--|
| <b>Spiral Riveted.</b>                                               |  |     |  |
| Galvanized.....                                                      |  | 40% |  |
| See also Elbows and Shoes; Eave Trough Miters; Strainers, Conductor. |  |     |  |

|                             |  |  |  |
|-----------------------------|--|--|--|
| <b>Conductor Strainers—</b> |  |  |  |
| See Strainers, Conductor.   |  |  |  |

|                                      |                 |  |  |
|--------------------------------------|-----------------|--|--|
| <b>Copper—</b>                       |                 |  |  |
| <b>Lake Ingot.....</b>               |                 |  |  |
| 12 1/4 @ 12 3/4                      |                 |  |  |
| Casting.....                         | 12 1/4 @ 12 3/4 |  |  |
| Sheet and Bolt.....                  | 18¢ lb basis    |  |  |
| Cold Rolled Sheets.....              | 19¢ lb basis    |  |  |
| Cold Rolled and Polished Sheets..... | 20¢ lb basis    |  |  |
| Planished Sheets.....                | 21¢ lb basis    |  |  |
| Bottoms, Pits and Flats.....         | 22¢ lb basis    |  |  |

|                               |              |  |  |
|-------------------------------|--------------|--|--|
| <b>Eave Trough Galvanized</b> |              |  |  |
| Territory.....                | L. C. L.     |  |  |
| Eastern.....                  | 80%          |  |  |
| Central.....                  | 75 & 17 1/2% |  |  |
| Southern.....                 | 75 & 7 1/2%  |  |  |
| S. Western.....               | 75 & 5 1/2%  |  |  |
| Terms, 2% for cash.           |              |  |  |

|                            |           |  |  |
|----------------------------|-----------|--|--|
| <b>Eave Trough Mitres—</b> |           |  |  |
| Lap or Slip Joint.....     | list, 25% |  |  |

|                                 |  |  |  |
|---------------------------------|--|--|--|
| <b>Elbows—Plain Adjustable—</b> |  |  |  |
| Eastern List.                   |  |  |  |

|                     |  |     |  |
|---------------------|--|-----|--|
| <b>Tin.....</b>     |  |     |  |
| Galvanized.....     |  | 30% |  |
| Perfect Elbows..... |  | 40% |  |

|                    |                     |  |  |
|--------------------|---------------------|--|--|
| <b>Stove Pipe—</b> |                     |  |  |
| Four-Piece         |                     |  |  |
| No. 1.....         | 4 1/4 5 1/4 6 1/4   |  |  |
| No. 2.....         | .65 .70 .75 .80 .85 |  |  |
| No. 3.....         | .60 .63 .65 .70 .80 |  |  |

|                          |  |     |  |
|--------------------------|--|-----|--|
| <b>Elbows and Shoes—</b> |  |     |  |
| Galvanized.....          |  | 60% |  |

|                         |  |  |  |
|-------------------------|--|--|--|
| <b>Gasoline—</b>        |  |  |  |
| See Petroleum Products. |  |  |  |

|                           |     |      |       |
|---------------------------|-----|------|-------|
| <b>Iron, Sheet—Black.</b> |     |      |       |
| One Pass, C. R.           |     |      |       |
| Soft Steel.               |     |      |       |
| R. G. Cleaned.            |     |      |       |
| Nos. 14 to 16.....        | lb. | 3.20 | 3.30¢ |
| Nos. 18 to 21.....        | lb. | 3.30 | 3.40¢ |
| Nos. 22 to 24.....        | lb. | 3.40 | 3.50¢ |
| Nos. 25 and 26.....       | lb. | 3.50 | 3.60¢ |
| No. 27.....               | lb. | 3.60 | 3.70¢ |
| No. 28.....               | lb. | 3.70 | 3.80¢ |

|                                             |     |            |  |
|---------------------------------------------|-----|------------|--|
| <b>Russia, Planished, &amp;c.</b>           |     |            |  |
| Genuine Russia, accord.                     |     |            |  |
| ing to assortment.....                      | lb. | 11 @ 14    |  |
| Do. Stained.....                            | lb. | 8 @ 10 1/2 |  |
| Patent Planished, 1/4" A, 1 1/2" B, 10¢ net |     |            |  |

|                     |     |              |  |
|---------------------|-----|--------------|--|
| <b>Galvanized.</b>  |     |              |  |
| Nos. 14 and 16..... | lb. | 3.40 @ 3.45¢ |  |
| Nos. 18 and 20..... | lb. | 3.65 @ 3.75¢ |  |
| Nos. 22 and 24..... | lb. | 3.95 @ 4.05¢ |  |
| No. 26.....         | lb. | 4.20 @ 4.35¢ |  |
| No. 27.....         | lb. | 4.50 @ 4.65¢ |  |
| No. 28.....         | lb. | 4.80 @ 4.95¢ |  |
| No. 30.....         | lb. | 5.15 @ 5.30¢ |  |

|                                                        |  |  |  |
|--------------------------------------------------------|--|--|--|
| <b>No. 20 and lighter, 36 inches wide, 25¢ higher.</b> |  |  |  |
|--------------------------------------------------------|--|--|--|

|                                  |  |                   |  |
|----------------------------------|--|-------------------|--|
| <b>Lead—</b>                     |  |                   |  |
| American Pig.....                |  |                   |  |
| Bar.....                         |  | 4.45 @ 4 1/2¢     |  |
| Pipe.....                        |  | 5 @ 5 1/2¢        |  |
| Tin Lined Pipe.....              |  | 12 1/2¢ @ 20¢ off |  |
| Sheet Lead.....                  |  | 7 1/2¢ @ 20¢ off  |  |
| Old Lead in exchange, 3 1/2¢ lb. |  |                   |  |

|                            |  |  |  |
|----------------------------|--|--|--|
| <b>Mitres Eave Trough—</b> |  |  |  |
| See Eave Trough Miters.    |  |  |  |

|                |  |          |  |
|----------------|--|----------|--|
| <b>Nickel—</b> |  |          |  |
| Per lb.....    |  | 55 @ 60¢ |  |

|                                       |         |         |  |
|---------------------------------------|---------|---------|--|
| <b>Paints, Oils &amp;c.—</b>          |         |         |  |
| <b>Leads—</b>                         |         |         |  |
| Lead, American White, in Oil:         |         |         |  |
| Lots of 500 lb or over.....           | 6 1/4   | @ 6 1/2 |  |
| Lots less than 500 lb.....            | 6 1/4   | @ 6 1/2 |  |
| Lead, White, in oil, 25 lb tin        |         |         |  |
| pails, add to keg price.....          |         | @ 1/2   |  |
| Lead, white, in oil, 12 1/2 lb tin    |         |         |  |
| pails, add to keg price.....          |         | @ 1     |  |
| Lead, white, in oil, 1 to 5 lb as-    |         |         |  |
| sorted tins, add to keg price.....    |         | @ 1 1/2 |  |
| Lead, White, Dry in bbls.....         | 5 1/4   | @ 6     |  |
| Lead, Red, bbls., 1/2 bbls. and kegs: |         |         |  |
| Lots 500 lb or over.....              | @ 6     |         |  |
| Lots less than 500 lb.....            | @ 6 1/2 |         |  |

|                                    |      |              |  |
|------------------------------------|------|--------------|--|
| <b>Oils—</b>                       |      |              |  |
| Linseed, City, raw.....            | gal. | 57 1/2 @ 58¢ |  |
| Linseed, City, boiled.....         | gal. | 59 1/2 @ 60¢ |  |
| Linseed State and West'n. raw..... | gal. | 56 1/2 @ 57¢ |  |

|                            |             |  |  |
|----------------------------|-------------|--|--|
| <b>Spirits Turpentine—</b> |             |  |  |
| In Southern bbls.....      | 47 1/2 @ 48 |  |  |
| In machine bbls.....       | 48 1/2 @ 49 |  |  |

|                             |  |        |  |
|-----------------------------|--|--------|--|
| <b>Putty—</b>               |  |        |  |
| In bulk.....                |  | \$2.25 |  |
| In bladders.....            |  | 2.25   |  |
| In cans 12 lb to 25 lb..... |  | 2.25   |  |
| In cans 1 lb to 5 lb.....   |  | 3.25   |  |

|                              |      |             |  |
|------------------------------|------|-------------|--|
| <b>Petroleum Products—</b>   |      |             |  |
| In Barrels (Barrel Included) |      |             |  |
| Stove Gasoline.....          | gal. | 1 1/4 @ 11¢ |  |
| Kerosene.....                | gal. | 12 @ 13¢    |  |

|                         |  |     |  |
|-------------------------|--|-----|--|
| <b>Pipe, Block Tin—</b> |  |     |  |
| Per lb.....             |  | 37¢ |  |

|                    |  |     |  |
|--------------------|--|-----|--|
| <b>Pipe Drain—</b> |  |     |  |
|                    |  | 40% |  |

|                      |  |  |  |
|----------------------|--|--|--|
| <b>Pipe, Spiral—</b> |  |  |  |
| See Conductors.      |  |  |  |

|                     |  |  |  |
|---------------------|--|--|--|
| <b>Registers—</b>   |  |  |  |
| List Sept. 2, 1901. |  |  |  |

|                                       |     |  |  |
|---------------------------------------|-----|--|--|
| Black Japannel.....                   | 70% |  |  |
| White Japannel.....                   | 70% |  |  |
| Nickel Plated.....                    | 70% |  |  |
| Bronze Finishes in Imitation of Gold. |     |  |  |
| Silver, Copper or Bronze.....         | 70% |  |  |
| Electroplated in Brass, Bronze or     |     |  |  |
| Copper.....                           | 70% |  |  |
| White Porcelain.....                  | 60% |  |  |
| Solid Brass and Bronze Metal.....     | 50% |  |  |

|                          |                   |                 |  |
|--------------------------|-------------------|-----------------|--|
| <b>Roofing Material—</b> |                   |                 |  |
| 1 Ply Tarred Paper.....  | ton.              | \$31.00 @ 32.00 |  |
| 2 Ply Tarred Paper.....  | roll, 108 sq. ft. | 55 @ 60¢        |  |
| 3 Ply Tarred Paper.....  | roll, 108 sq. ft. | 80 @ 85¢        |  |
| Slaters' Felt.....       | ton.              | \$35.00 @ 36.00 |  |
| Roofing Pitch.....       | bbl.              | \$2.50          |  |

|                           |      |                 |  |
|---------------------------|------|-----------------|--|
| <b>Rosin—</b>             |      |                 |  |
| Common and Good—Strainer. |      |                 |  |
| Rosin, C. & D.....        | bbl. | \$1.55 @ \$1.60 |  |
| Rosin, E. & F.....        | bbl. | 1.40 @ 1.70     |  |
| Rosin, G. & H.....        | bbl. | 1.72 @ 1.95     |  |
| Rosin, I. & K.....        | bbl. | 2.35 @ 3.00     |  |
| Rosin, M. & N.....        | bbl. | 3.35 @ 3.80     |  |

|                          |  |  |  |
|--------------------------|--|--|--|
| <b>Shoes and Elbows—</b> |  |  |  |
| See Elbows and Shoes.    |  |  |  |

|                                |  |  |  |
|--------------------------------|--|--|--|
| <b>Slate Roofing—</b>          |  |  |  |
| L. o. b. cars, Quarry Station. |  |  |  |
| According to size.             |  |  |  |

|                          |     |                 |  |
|--------------------------|-----|-----------------|--|
| <b>Pennsylvania:</b>     |     |                 |  |
| Best Bangor.....         | sq. | \$3.75 @ \$5.10 |  |
| No. 1 Bangor Ribbon..... | sq. | 3.50 @ 3.75     |  |
| Pen Argyle.....          | sq. | 3.50 @ 4.35     |  |
| Peach Bottom.....        | sq. | 5.25 @ 6.35     |  |
| No. 1 Chapman.....       | sq. | 3.75 @ 4.75     |  |
| No. 1 Penna. lark.....   | sq. | 3.15 @ 4.15     |  |
| Unfading Washington Ban- |     |                 |  |
| gor.....                 | sq. | 3.00 @ 4.50     |  |

|                      |     |                 |  |
|----------------------|-----|-----------------|--|
| <b>Vermont:</b>      |     |                 |  |
| No. 1 Sea Green..... | sq. | \$2.25 @ \$3.50 |  |
| Purple.....          | sq. | 4.50 @ 5.00     |  |
| Unfading Green.....  | sq. | 4.25 @ 5.25     |  |
| Re'l.....            | sq. | 7.00 @ 11.00    |  |

|                                 |     |               |  |
|---------------------------------|-----|---------------|--|
| <b>Maine:</b>                   |     |               |  |
| Brownville, Unfading Black..... |     |               |  |
| No. 1.....                      | sq. | \$5.25 @ 7.50 |  |

|                                                                             |  |               |  |
|-----------------------------------------------------------------------------|--|---------------|--|
| <b>Solder—</b>                                                              |  |               |  |
| 1/2 & 3/4 guaranteed.....                                                   |  | 1 1/2 @ 1 1/4 |  |
| No. 1.....                                                                  |  | 1 1/4 @ 1 1/2 |  |
| Prices of Solder indicated by private brands vary according to composition. |  |               |  |

|                          |  |  |  |
|--------------------------|--|--|--|
| <b>Soldering Fluids—</b> |  |  |  |
| —Per Pound.              |  |  |  |
| Barrels Q'tities         |  |  |  |

|                                   |           |            |  |
|-----------------------------------|-----------|------------|--|
| Concentrated Flux.....            | 4c        | 5c         |  |
| Eureka Flux.....                  |           |            |  |
| Triple Strength.....              | 3c        | 3 1/2c     |  |
| Extra Concentrated.....           | 4 1/2c    | 5c         |  |
| Crystal.....                      | 7c        |            |  |
| Gedney's Fluid.....               | 2c        | 2c         |  |
| Lennox Fluid.....                 | 2c        | 8c         |  |
| Perfection Flux.....              | 3c        | 3 1/2 @ 1c |  |
| Yager's Salts, 1 lb. bottles..... | each, 50¢ |            |  |
| 1 lb. bottles, per lb., 45¢       |           |            |  |

|                           |  |          |  |
|---------------------------|--|----------|--|
| <b>Soldering Coppers—</b> |  |          |  |
| Per lb.....               |  | 22 @ 24¢ |  |

|                      |  |               |  |
|----------------------|--|---------------|--|
| <b>Spelter—</b>      |  |               |  |
| Western Spelter..... |  | 6 1/2 @ 6 3/4 |  |

|                     |  |  |  |
|---------------------|--|--|--|
| <b>Spiral Pipe—</b> |  |  |  |
| See Conductors.     |  |  |  |

|                           |  |  |  |
|---------------------------|--|--|--|
| <b>Stove Pipe Elbows—</b> |  |  |  |
| See Elbows, Stove Pipe.   |  |  |  |

|                      |  |  |  |
|----------------------|--|--|--|
| <b>Stove Trucks—</b> |  |  |  |
| See Trucks, Stove.   |  |  |  |

|                              |  |     |  |
|------------------------------|--|-----|--|
| <b>Strainers, Conductor—</b> |  |     |  |
| Galvanized.....              |  | 50% |  |

|                           |     |             |  |
|---------------------------|-----|-------------|--|
| <b>Tin Pigs and Bars—</b> |     |             |  |
| Banca, pigs.....          | lb. | 27 1/2 @ 28 |  |
| Stralts, pigs.....        | lb. | 27 1/2 @ 28 |  |
| Stralts, in bars.....     | lb. | 28 1/2 @ 29 |  |

|                                                               |  |  |  |
|---------------------------------------------------------------|--|--|--|
| <b>Tin Plates American</b>                                    |  |  |  |
| <b>Charcoal Plates, Bright—</b>                               |  |  |  |
| N. B.—The price of 20 x 28 sizes double the price of 14 x 20. |  |  |  |

|                       |              |        |  |
|-----------------------|--------------|--------|--|
| <b>Calland Grade:</b> |              |        |  |
| IC.....               | 14 x 20..... | \$6.75 |  |
| IX.....               | 14 x 20..... | 8.25   |  |
| IXX.....              | 14 x 20..... | 9.50   |  |
| IXXX.....             | 14 x 20..... | 10.75  |  |
| IXXXX.....            | 14 x 20..... | 12.00  |  |

|                     |              |       |  |
|---------------------|--------------|-------|--|
| <b>Melyn Grade:</b> |              |       |  |
| IC.....             | 14 x 20..... | 6.25  |  |
| IX.....             | 14 x 20..... | 7.75  |  |
| IXX.....            | 14 x 20..... | 9.00  |  |
| IXXX.....           | 14 x 20..... | 10.25 |  |
| IXXXX.....          | 14 x 20..... | 11.50 |  |

|                       |              |       |  |
|-----------------------|--------------|-------|--|
| <b>Allaway Grade:</b> |              |       |  |
| IC.....               | 14 x 20..... | 5.75  |  |
| IX.....               | 14 x 20..... | 6.85  |  |
| IXX.....              | 14 x 20..... | 7.95  |  |
| IXXX.....             | 14 x 20..... | 9.05  |  |
| IXXXX.....            | 14 x 20..... | 10.15 |  |

|                                                      |  |               |  |
|------------------------------------------------------|--|---------------|--|
| <b>Coke Plates, Bright—</b>                          |  |               |  |
| Bessemer Steel, or equal to J. B. Grade, full weight |  |               |  |
| IC, 14 x 20.....                                     |  | \$4.90 @ 5.00 |  |
| IX, 14 x 20.....                                     |  | \$6.00        |  |

|       |              |       |
|-------|--------------|-------|
| IC,   | 14 x 20..... | 6.25  |
| IX,   | 14 x 20..... | 7.75  |
| IXX,  | 14 x 20..... | 9.00  |
| IXXV, | 14 x 20..... | 10.25 |



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Ohio Stove Co., Portsmouth, O.

Pittsburgh Stove & Range Co., Pitts-  
burgh, Pa.

Portsmouth Stove & Range Co., Ports-  
mouth, O.

Quincy Fdry. & Novelty Co., Quincy,  
Ill.

Reading Stove Works, Reading, Pa.

Richmond Company, Norwich, Conn.

St. Louis Enameling Co., St. Louis, Mo.

Schneider & Trenkamp Co., Clevel-  
and, O.

Sheppard, Isaac A. & Co., Phila., Pa.

Smith & Anthony Co., Boston, Mass.

Somerset Stove Foundry Co., Somerset,  
Mass.

Stamford Foundry Co., Stamford, Ct.

Twin Burner Vapor Stove Co., St.  
Louis, Mo.

Union Stove Works, 70 Beekman St.,  
N. Y.

Van, John, Range Co., Cincinnati, O.

Walker & Pratt Mfg. Co., Boston, Mass.

Weir Stove Co., Taunton, Mass.

White, Warner Co., Taunton, Mass.

Willard, Wm. G., St. Louis, Mo.

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Ohio.  
Dighton Furnace Co., Taunton, Mass.  
Howes, S. M. Co., Boston, Mass.  
Metropolis Sheet Metals & Stove Re-  
pairing Co., Newark, N. J.  
Monarch Stove & Mfg. Co., Mansfield, O.  
Union Stove Works, 70 Beekman St.,  
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and, O.  
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ton, Mass.  
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Meurer Bros. Co., Brooklyn, N. Y.  
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**Water Closets.**  
Adee, Fred. & Co., 90 Beekman St., N. Y.  
Colwell Lead Co., 63 Centre St., N. Y.

**Water Fronts.**  
Clark, Henry N. Co., Boston, Mass.

**Water Heaters.**  
Kemp, C. M. Mfg. Co., Baltimore, Md.

**Wind Gages.**  
Miner & Peck Mfg. Co., New Haven, Ct.

**Window Operating Apparatus.**  
Drouve, G. Co., Bridgeport, Conn.

SEE ALPHABETICAL INDEX, PAGE 74.

# THE METAL WORKER.

With which is Incorporated The Stove and Tin Trade Journal, The Sheet Metal Builder, and Metal.

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# ALPHABETICAL LIST OF ADVERTISERS.

|                                            |                                            |                                                       |                                                |                                               |
|--------------------------------------------|--------------------------------------------|-------------------------------------------------------|------------------------------------------------|-----------------------------------------------|
| Adee, Fred. & Co..... 41                   | Cooney & Geiger..... 79                    | Gummev, McFarland & Co... 83                          | Miller, Wm. Range & Furnace Co..... 9          | Sheppard, Isaac A. & Co..... 1                |
| Adler, H. Co..... 12                       | Cope, Geo. W..... 36                       | Gnnster & Forsyth..... 41                             | Milwaukee Pattern Works... 31                  | Shields, W. H. & Co..... 37                   |
| American Blower Co..... 25                 | Cortright Metal Roofing Co.. 85            | Gurney Heater Mfg. Co..... 21                         | Miner & Peck Mfg. Co..... 41                   | Smith, H. B. Co..... 13                       |
| American Furnace Co..... 11                | Cory, Uzal & Co..... 24                    | Harrington & King Perforating Co..... 74              | Monarch Stove & Mfg. Co.... 10                 | Smith & Anthony Co..... 92                    |
| American Galvanizing Wks., 80              | Crosby Steam Gage & Valve Co..... 1        | Hart & Cooley Co..... 29                              | Moncrief F'ce & Fdry. Co.... 30                | Smith & Thayer Co..... 20                     |
| American Radiator Co..... 19               | Curtis & Curtis Co..... 39                 | Hart & Crouse Co..... 16                              | Montross Metal Shingle Co... 85                | Somerset Stove Fdry. Co.... 24                |
| American Sheet Steel Co... 1&84            | Dangler Stove & Mfg. Co.... 10             | Heath, C. C. & Co..... 36                             | Morgan & Co..... 41                            | Sommer's, John, Son..... 1                    |
| American Steam Gage & Valve Mfg. Co..... 1 | Danzer Metal Works ..... 89                | Hessler, H. E. Co..... 31                             | Mott, J. L. Iron Works..... 28                 | Special Notices..... 76                       |
| American Steel Roofing Co.. 81             | Day Metallic Mfg. Co..... 38               | Hoffman, Geo. W..... 38                               | Mueller, L. J. F'ce Co.. .... 21               | Sperry, D. R. & Co..... 78                    |
| American Tin Plate Co. .... 84             | Dietz, R. E. Co..... 78                    | Home Stove Co..... 5                                  | Mullins, W. H..... 88                          | Stamford Foundry Co..... 17                   |
| Anderson Coupling Co..... 39               | Dighton Furnace Co..... 27                 | Howes, S. M. Co... 12, 34, 35&38                      | Munsell, E. & Co..... 31                       | Stanton Heater Co..... 19                     |
| Asphalt Ready Roofing Co.. 85              | Dixon, Jos. Crucible Co..... 78            | Howson & Howson ..... 77                              | National Enameling & Stamp- ing Co..... 42     | Steel & Iron Aluminum Coat- ing Co..... 83    |
| Ayling Bros..... 38                        | Douhle Truss Cornice Brake Co..... 88      | Huhbell, Harvey..... 41                               | National Pipe Bending Co... 27                 | Stiles & Parker Press Co.... 90               |
| Baker L. B. Mfg. Co..... 31                | Drake, W. H..... 31                        | Huse, Joseph & Son..... 31                            | New York Iron Roofing & Corrugating Co..... 80 | Stocking, E. B..... 70                        |
| Barstow Stove Co..... 92                   | Drake & Mills..... 79                      | Ideal Register Co..... 29                             | New York Trade School.... 76                   | Stolz, Frank D..... 25                        |
| Beckwith, P. D., Est. of..... 2            | Dreis, Andrews & Krump.... 88              | Independent Register Co.... 31                        | Niagara Machine & Tool Wks 89                  | Stowell Mfg. Co..... 88                       |
| Belleville Stove Works..... 32             | Drouve, G. Co..... 81                      | International Correspond- ence Schools..... 76        | O'Halloran & Jacobs..... 80                    | Swaine, F. J. Co..... 90                      |
| Berger Bros. Co..... 82                    | Edwards, J. H..... 38                      | International Heater Co.... 3                         | Ohio Stove Co..... 9                           | Swett, A. L. Iron Works.... 25                |
| Berger Mfg. Co..... 86                     | Edwards Mfg. Co..... 86                    | Janney, Steinmetz & Co.... 88                         | Ohl, Geo. A. & Co..... 90                      | Taylor & Boggis Fdry. Co... 26                |
| Bergstrom Bros. & Co..... 23               | Ellers, J. H. & Co..... 87                 | Jenkins Bros..... 1                                   | Osborn, J. M. & L. A ..... 82                  | Taylor Co., N. & G..... 92                    |
| Bertsch & Co..... 90                       | Energy Elevator Co..... 77                 | Johnson, E. J. & Co..... 80                           | Ostrander, W. R. & Co..... 81                  | Toledo Mch. & Tool Co.... 88                  |
| Best Light Co..... 27                      | Enterprise Foundry Co..... 29              | Joliet Stove Works..... 6                             | Patric Furnace Co..... 21                      | Trane, Jas. A. Vacuum Heat- ing Co..... 41    |
| Bibb, B. C. Stove Co..... 24               | Evans Stamping & Plating Co 26             | Keene, Geo. C. & Co..... 91                           | Peck, Stow & Wilcox Co.... 89                  | Triumph Adjustable Stove Pipe Mfg. Co..... 36 |
| Bickelhaupt, G. Skylight Wks 82            | Excelsior Steel Furnace Co.. 28            | Kelsey Heating Co..... 42                             | Peck-Williamson Co..... 17                     | Troy Nickel Works ..... 34                    |
| Bliss, E. W. Co..... 90                    | Excelsior Tool & Mch. Wks.. 91             | Kemp, C. M. Mfg. Co..... 39                           | Pell, John Enameling Wks.. 37                  | Tubular Heating & Venti- lating Co..... 26    |
| Blodgett, G. S. Co..... 25                 | Fallkenan-Sinclair Mch. Co. 89             | Kewanee Boiler Co..... 20                             | Penn Metal Ceiling & Roofing Co..... 81        | Twin Burner Vapor Stove Co 35                 |
| Bonnot Co..... 24                          | Fanner Mfg. Co..... 27                     | Kieley & Mueller..... 1                               | Perkins, J. L. & Co.... 79                     | Union Stove Works..... 22                     |
| Boynston Furnace Co..... 18                | Fenn, Geo. E..... 79                       | Klaine, F. A. & Co..... 8                             | Pierce, Butler & Pierce Mfg. Co..... 25        | Utica Heater Co..... 30                       |
| Brand Stove Co..... 28                     | Ferricup Metal Co. .... 80                 | Koven, L. O. & Bro..... 39                            | Pittsburgh Stove & Range Co 4                  | Valentine, M. D. & Bro. Co.. 37               |
| Bray, J. & Co..... 80                      | Floyd, Wells & Co..... 16                  | Kramer Bros..... 31                                   | Portsmouth Stove and Range Co..... 4           | Van, John, Range Co..... 8                    |
| Bridgeport Crucible Co..... 37             | Follanshee Bros. Co..... 1                 | Lalace & Grosjean Mfg. Co. 77                         | Preshrey Stove Lining Co... 37                 | Vedder Pattern Works..... 36                  |
| Brien Heater Co..... 25                    | Forest City Fdry. & Mfg. Co.. 25           | Lawless, John H..... 39                               | Quincy Fdry. & Novelty Co. 12                  | Vogel, William & Bros..... 78                 |
| Bruce & Cook..... 85&92                    | Forest City Fdry. & Mfg. Co.. 25           | Lawrence-Letts Elbow Co... 34                         | Rasner & Dinger Co..... 81                     | Waite, Raulet & Co..... 91                    |
| Buffalo Forge Co..... 88                   | Foster, F. W. Mfg. Co..... 41              | Lennox Manufacturing Co.. 30                          | Reading Stove Works..... 33                    | Walker & Pratt Mfg. Co. ... 5                 |
| Burgess Soldering Furnace Co..... 38       | Frاند, Martin J. & Co..... 82              | Litchfield, J. M..... 77                              | Richmond Co..... 14                            | Walworth Mfg. Co..... 1                       |
| Burton, W. J. & Co.... 31                  | Friedley & Voshardt..... 86                | Littleford Bros..... 82                               | Robinson, J. M. & Co. .... 91                  | Washburne, E. G. & Co.. 79&89                 |
| Callahan, Geo. & Co..... 38                | Frink, L. P..... 92                        | McClure & Co..... 92                                  | Rochester Radiator Co..... 29                  | Waterbury Brass Co..... 1                     |
| Canton Machine & Mfg. Co.. 89              | Fuller & Warren Co..... 1                  | McLeod & Henry Co..... 37                             | St. Louis Enamelling Co.... 11                 | Weir Stove Co..... 92                         |
| Canton Steel Roofing Co.... 87             | Galesburg Cornice Works... 87              | McSherry, Chas..... 91                                | Salem Nail Co..... 80                          | Weiss, H. & Co..... 91                        |
| Castle, Wilmot & Co..... 28                | Galt, John & Sons..... 80                  | Magee Furnace Co..... 1                               | Saunders, D. Sons ..... 39                     | Whaley-Totten Co..... 81                      |
| Chattanooga Steel Roofing Co..... 89       | Genuine Bangor Slate Co.... 80             | Magoon, A. J. & Son..... 36                           | Schneider & Trenkamp Co... 11                  | Wheeler, W. A..... 91                         |
| Cincinnati Stamping Co.... 85              | Giblin & Co..... 15                        | March-Brownhack Stove Co. 23                          | Schratwiesers Metal Lath Works..... 85         | White, Warner Co..... 24                      |
| Clark, Henry N. Co..... 19                 | Glessel, Henry & Co..... 41                | March-Brownhack Stove Co. 23                          | Schwab, R. J. & Sons Co.... 23                 | Willard, Wm. G..... 27                        |
| Clark Novelty Co..... 79                   | Globe Iron Rfg. & Corrugat- ing Co..... 85 | Marcy Stove Repair Co. ... 37                         | Schwerdtle Stamp Co..... 80                    | Williams Stove Lining Co.. 34                 |
| Clark, Quilen & Morse..... 87              | Globe Ventilator Co..... 79                | Marston, I. G. & Co..... 39                           | Shepard, Sidney & Co..... 36                   | Wister, L. & R. & Co ..... 92                 |
| Clason, Arch. Metal Works.. 81             | Gohelle Pattern Co..... 36                 | Metropolis Sheet Metals & Stove Repairing Co. .... 30 |                                                | Wood, Alan Co..... 85                         |
| Clayton & Lambert Mfg. Co.. 38             | Gordon, W. J..... 91                       | Meurer Bros. Co..... 83                               |                                                | Wood & Bishop Co..... 30                      |
| Clough, R. M..... 90                       | Gorton & Lidgerwood Co.... 1               | Meyer, F. & Bro. Co..... 17                           |                                                | Young, Jos. H..... 38                         |
| Coe, Jas. A. & Co..... 85                  | Graf, Furnace Co..... 19                   | Michigan Stove Co..... 7                              |                                                |                                               |
| Colwell Lead Co..... 41                    | Gray, G. L..... 77                         | Millar, Chas. & Son Co.... 92                         |                                                |                                               |

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Original letters of reference should not be inclosed with replies to advertisements appearing in these columns as they are frequently mislaid and lost. A copy of the reference will serve the purpose.

## HELP WANTED.

Five or six good CORNICE and SKYLIGHT MAKERS. Apply, ready for work, Newburgh Cornice Works, Newburgh, N. Y. Sept. 20

TINSMITH; one accustomed to furnace work and jobbing; must be steady and reliable; married man preferred; good job to right party. J. H. Makin, Springvale, Maine. Sept. 20

At once, one good, all-round TINNER; steady job and good wages to the right man. J. B. Crowl, 211 East Main street, Alliance, Ohio. Sept. 20

TINNER; a good tinner who understands inside and outside work, also furnace and pump work, wanted by October 1; steady job to right man. Finch Brothers, Athens, Pa. Sept. 20

A first-class FURNACEMAN; one who has some knowledge of plumbing; a man who is sober and industrious; none others need apply; give full particulars. M. H. Nutter, P. O. Box 96, Pittsfield, N. H. Sept. 20

A good, all-round TINNER for inside and outside work, hot air furnace work; work the year round; state wages and references. Lantz Brothers, Shelbyville, Ill. Sept. 20

At once, a first-class TINSMITH; one good on job work. Jameson Bros., Canton, Ohio. Sept. 20

PLUMBER and TINNER; I am in need of a sober and reliable man that can do plumbing, hot water and steam heating and hot air furnace work and tinning; to such a man good wages and steady employment will be given. W. B. Frymire, Bloomfield, Neb. Sept. 20

STOVE FOUNDRY SUPERINTENDENT for concern operating 100 men; active young man who has had experience as assistant preferred; state age, experience and wages expected. "Ohio," care *The Metal Worker*, New York. Sept. 20

A first-class, sober and industrious mechanic in the cornice, skylight and bay window business to act as WORKING FOREMAN, also competent to take off quantities and make accurate estimates; give references, age and wages expected. "Industrious," care *The Metal Worker*, New York. Sept. 20

GOOD CORNICE MAKERS and TINNERS, 35 cents per hour; steady work for one year guaranteed. Duluth Corrugating & Roofing Company, Duluth, Minn. Sept. 20

At once, STEAM and HOT WATER FITTERS. Canfield Stove Company, Rondout, N. Y. Sept. 20

A first-class, all-round TINNER, sober and reliable; will give steady work the year around to such a man; wages, 30 cents per hour. Carnarius & Dudley, Terre Haute, Ind. Sept. 20

Two A1 TINSMITHS and FURNACEMEN wanted at once. Fowler & Sellars, White Plains, N. Y. Sept. 20

STEAM FITTERS and PLUMBERS; can use a few good men that have had experience in installing automatic sprinkling plants in factories. Box B, Danbury, Conn. Sept. 20

Good TINNER and SLATER; will pay good wages to the right party; come right away prepared to work. Chas. H. Smith, 38 East Wheeling street, Washington, Pa. Sept. 20

One first-class TINSMITH who understands furnace and heavy galvanized iron work; steady work year around to a good man. F. E. Newman, Johnstown, Pa. Sept. 20

Two or three first-class TINNERS for inside and outside work that understand hot air furnace work; none but sober, industrious men wanted; must come at once. The G. M. Griffith Company, Hinton, W. Va. Sept. 20

A first-class PLUMBER and TINSMITH to take charge of shop in a town of about 2500; must be strictly temperate. L. P. Smith, Camden, N. Y. Sept. 20

At once, first-class PLUMBER and FITTER; give experience and reference; only first-class man need apply. B. A. Adams, Rutland, Vt. Sept. 20

Twelve MOLDERS wanted on stove plate. "Fotkaw," care *The Metal Worker*, New York. Sept. 20

ROOFERS, CORNICE, SKYLIGHT and SHEET METAL WORKERS wanted. Gara McGinley & Co., 23 South Seventeenth street, Philadelphia, Pa. Sept. 20

At once, two strictly sober young PLUMBERS, TINSMITHS and FURNACE WORKERS; steady work to the right men. W. H. Smith, Box 373, Aiken, S. C. Sept. 20

SUPERINTENDENT for art metal goods factory; only those with experience in this line need answer; excellent position for the right man. "G. & T.," care *The Metal Worker*, New York. Sept. 20

At once, a good, all-round TINNER for general work; steady employment the year around, wages, \$2 per day. J. F. Davidson, Lakewood, N. J. Sept. 20

Two good CORNICE MAKERS; steady job for good men. Apply to the Peet & Schuster Company, Springfield, Ohio. Sept. 20

FOREMAN capable of taking full charge of a tinning and retinning department, by a large tinware manufacturer; state experience, age and salary expected. "Superintendent," 59 Sixteenth street, Milwaukee, Wis. Sept. 20

Bright, energetic SALESMAN, conversant with tin plate and metals, for New England and New York; give experience and references. "Plate," care *The Metal Worker*, New York. Sept. 20

Ten good, reliable, sober PLUMBERS; steady work for six months and good prospects for permanent position; no labor troubles; state wages. Geo. W. Whitehill, Plumber, Butler, Pa. Sept. 20

A PLUMBER; young man who is sober and industrious; must be up to date in his work and thoroughly capable; references. J. A. Freeman, Plattsburg, N. Y. Sept. 13

A first-class all-round TINSMITH; one who understands furnace work. Write, stating experience and wages wanted, or apply in person at once. A. E. Pulver & Co., Shortsville, N. Y. Sept. 13

At once, first-class FURNACE and BOILER SALESMAN; one who understands his business and is acquainted with the trade in Northern Illinois and Southern Wisconsin. "Boilers," care *The Metal Worker*, 1205 Fisher Building, Chicago, Ill. Sept. 13

One or two good all-round outside men to do tinning, cornice work and slating; none but sober men; steady work to the right men. Call or address Henry Reuter, 234 Schuyler avenue, Kankakee, Ill. Sept. 13

SALESMAN well acquainted with the steam fitters to travel in the States of New York and Pennsylvania; give references and salary expected. "Steam Goods," care *The Metal Worker*, New York. Sept. 13

At once, two first-class, all-round PLUMBERS; one to do steam fitting; union wages, \$3.25 per day of nine hours. D. H. Williams, Schenectady, N. Y. Sept. 13

TINSMITH and PLUMBER; also a man who understands furnace work, steam fitting, &c., for a country shop; single man of good habits who can be trusted; nonunion man preferred. F. J. Ganong, Carmel, N. Y. Sept. 13

CORNICE WORKERS; 100 wanted; cutters and bench hands; good men only; union shop. David Lupton's Sons Company, Allegheny avenue and Tulip street, Philadelphia, Pa. Sept. 13

First-class CORNICE and SKYLIGHT MAKER; must be able to cut out, put together and erect same; good wages and steady work for the right man. P. O. Box 592, New Haven, Conn. Sept. 13

TINNER and SLATER for outside work; steady work to good workman; guaranteed work in the shop in winter. P. H. Bayley, Sidney, Ohio. Sept. 13

Immediately, two first-class CORNICE MAKERS; good wages; union shop; eight hours per day; none but first-class men need apply. Wm. T. Disley, Waterbury, Conn. Sept. 13

FURNACE SALESMAN thoroughly posted regarding New England territory; good position for first-class man; give references. "Caloric," care *The Metal Worker*, New York. Sept. 13

SALESMAN on stoves, ranges and heaters, stove repairs, &c., outside, in Brooklyn. John M. Wolf Company, 742-744 Flushing avenue, Brooklyn, N. Y. Sept. 13

Three first-class TRAVELING SALESMEN familiar with gas, gasoline and oil stove line; state age, experience, &c. Box 87, Station B, Cleveland, Ohio. Sept. 13

An energetic SALESMAN or CLERK who has had experience in a stove, furnace and plumbing establishment; state age, married or single, and salary expected. Apple Plumbing & Heating Company, West Chester, Pa. Sept. 13

At once, two PLUMBERS and two STEAM FITTERS; steady situation and good wages to mechanics who are sober and industrious. Swanger & McClain, Marion, Ind. Sept. 13

Experienced CORRESPONDENT; one thoroughly familiar with the metal ceiling business; references required. P. O. Box 472, Canton, Ohio. Sept. 13

An experienced STOVE and FURNACE SALESMAN to cover Pennsylvania trade; give full particulars as to experience and state salary wanted. Address "A. B.," care *The Metal Worker*, New York. Sept. 6

A1 WORKING FOREMAN in jobbing department tinware factory; must be well recommended. "Box," care *The Metal Worker*, New York. Aug. 30

## SITUATIONS WANTED.

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By a TINSMITH and SHEET IRON WORKER; temperate and reliable; proficient in all kinds of work; inside work preferred; moderate wages; A1 references. Frank M. Le Cœur, 77 Barrow street, New York. Sept. 20

By STEAM FITTER'S HELPER; three years' experience; steady position. "H. F.," care *The Metal Worker*, New York. Sept. 20

By A1 BRASS MOLDER, at once; steady and reliable; references if desired. "F. B.," P. O. Box 156, Campbell, N. Y. Sept. 20

By first-class TINSMITH and SHEET IRON WORKER; furnace work a specialty; temperate and reliable and A1 mechanic. "F. J. G.," P. O. Box 156, Campbell, N. Y. Sept. 20

PLUMBER wishes a position in city or country. Geo. Conlin, 499 West 124th street, New York. Sept. 20

PLUMBER wants work, city or country, country preferred. Thos. Burke, care J. Connolly, 2533 Third avenue, New York. Sept. 20

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PLUMBER and TINSMITH wants position, city or country. "Doellner," Hicksville, L. I., N. Y. Sept. 20

By a good, all-round SHEET IRON WORKER, in or out of the city. "E. S.," care *The Metal Worker*, New York. Sept. 20

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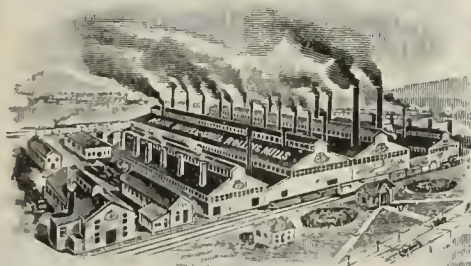
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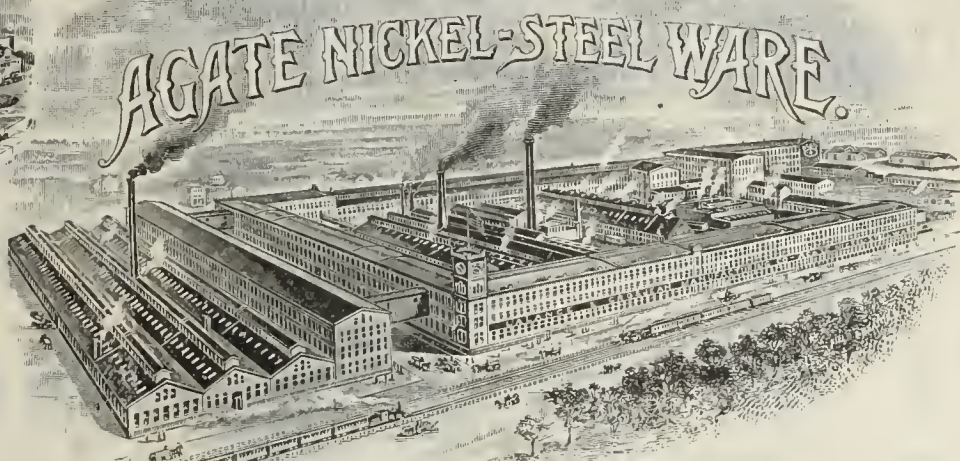
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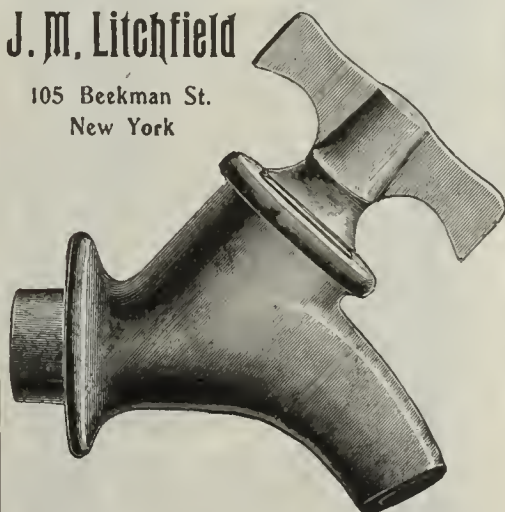
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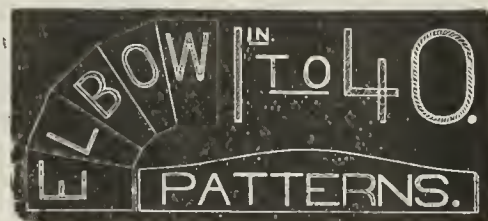
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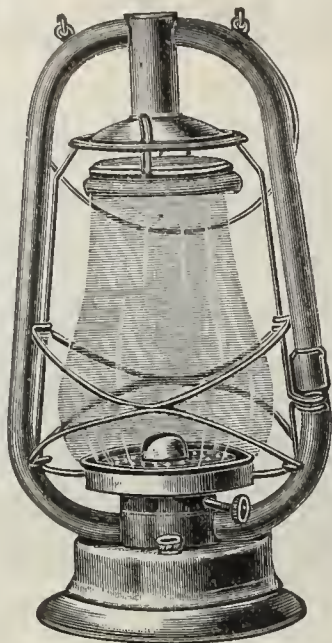
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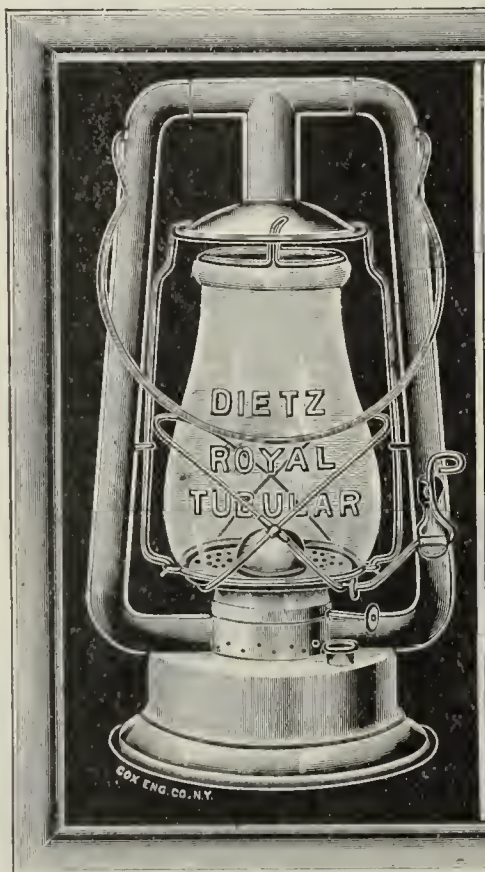


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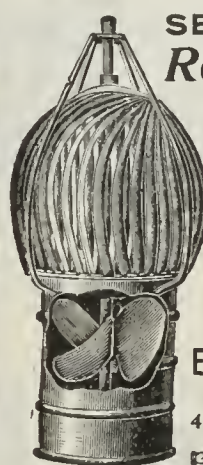


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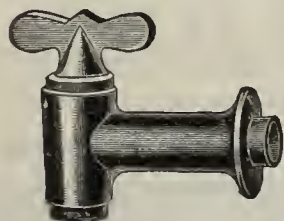
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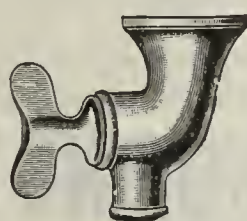
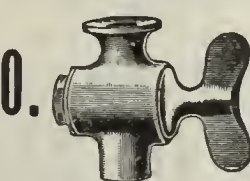
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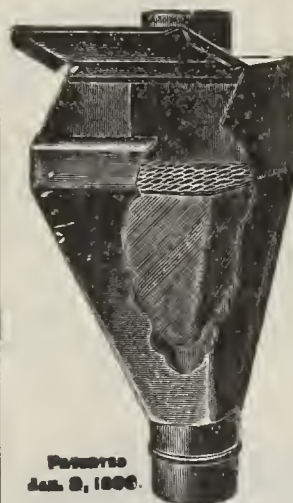
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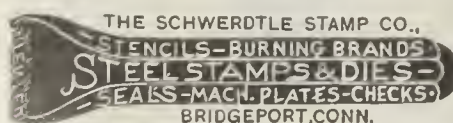
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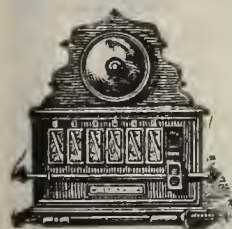
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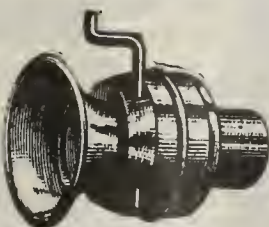
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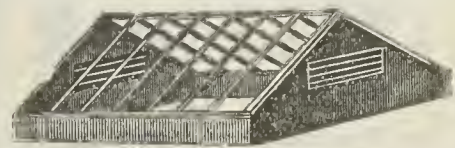
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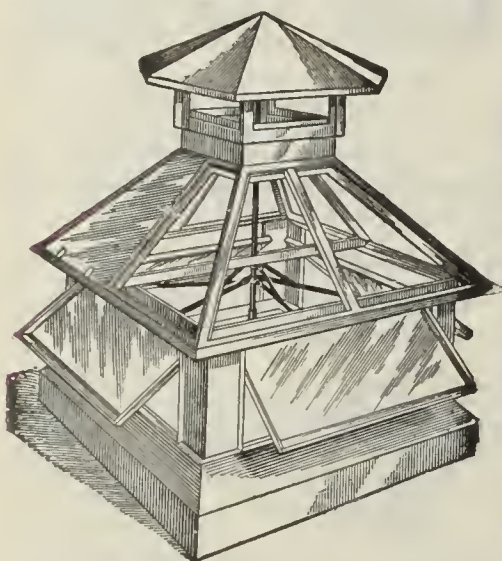
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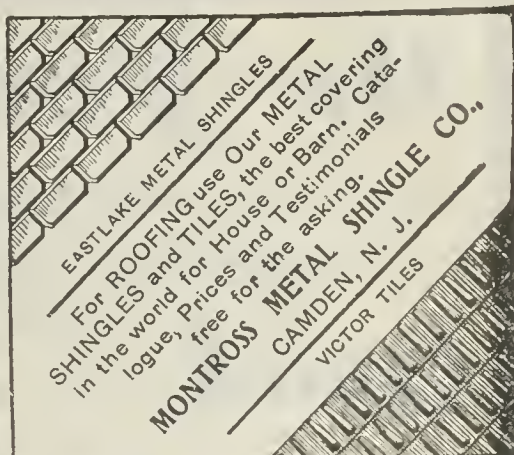
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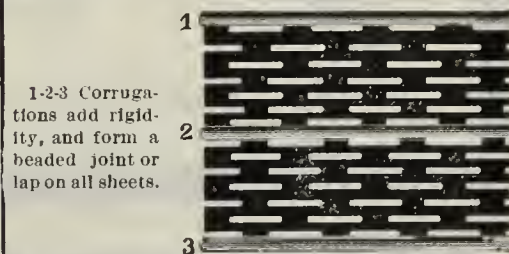
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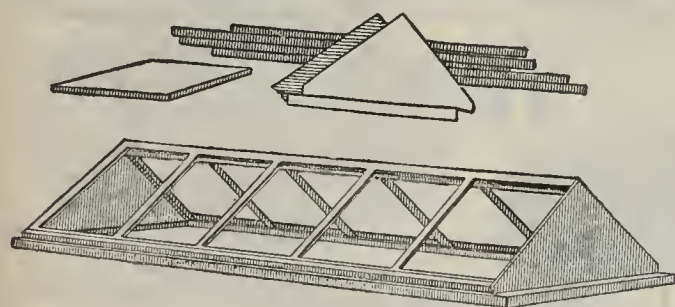
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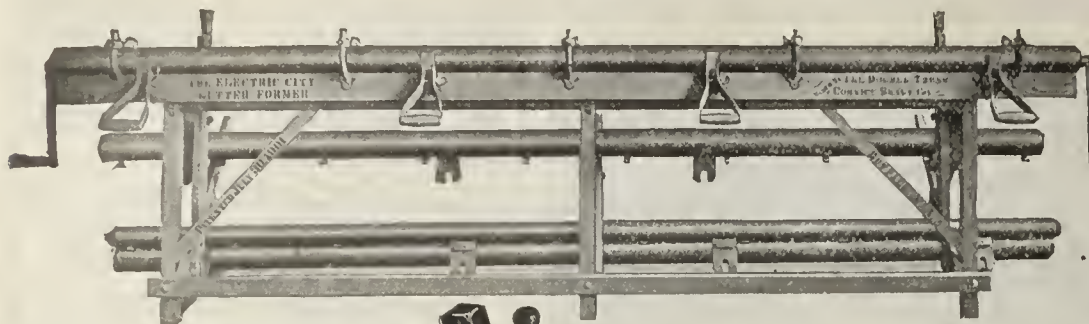
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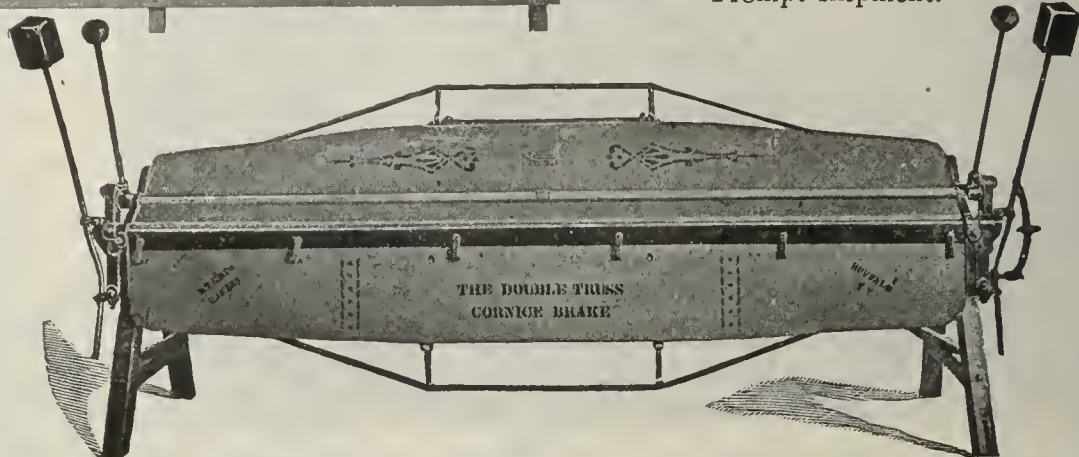




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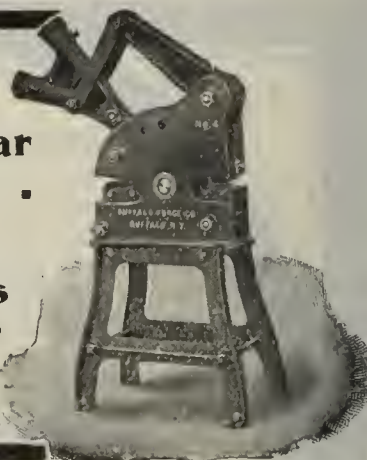
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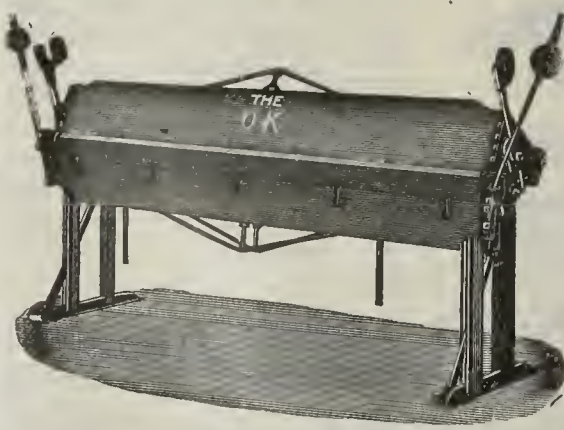


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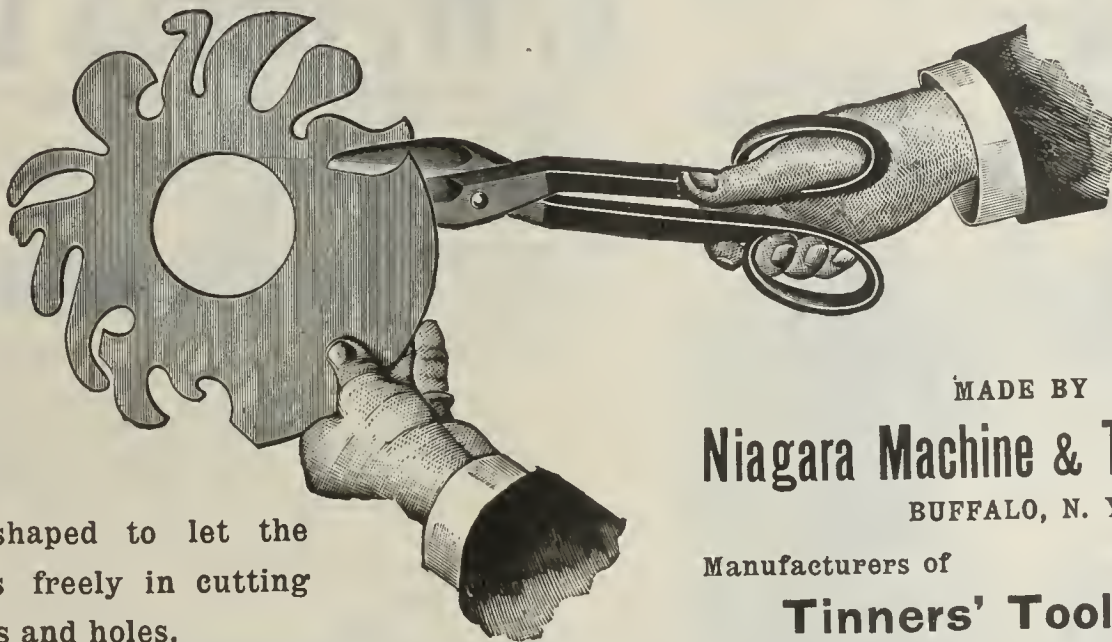
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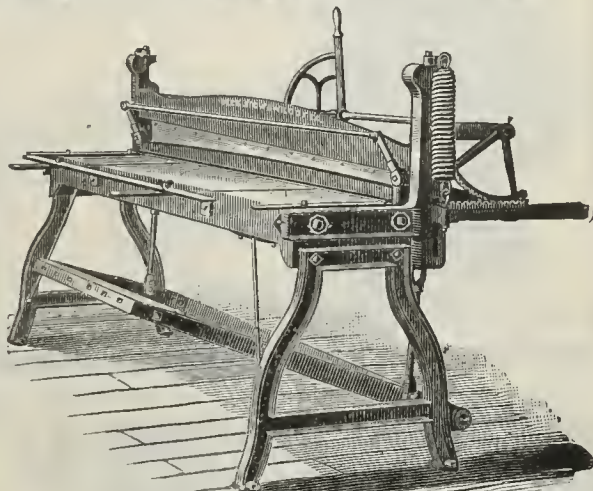
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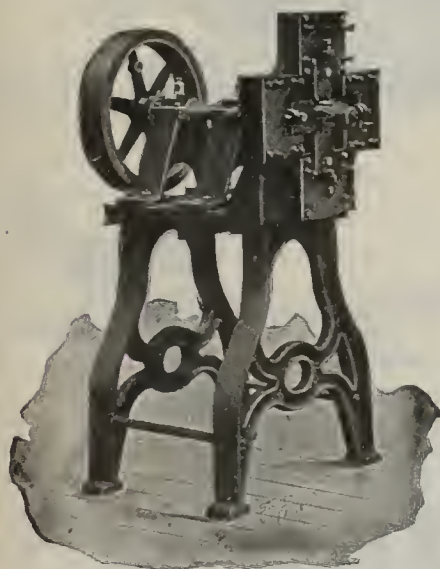
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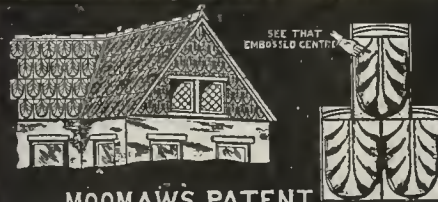
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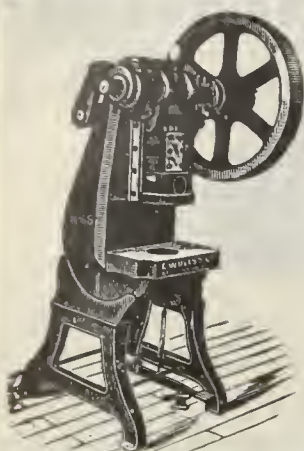
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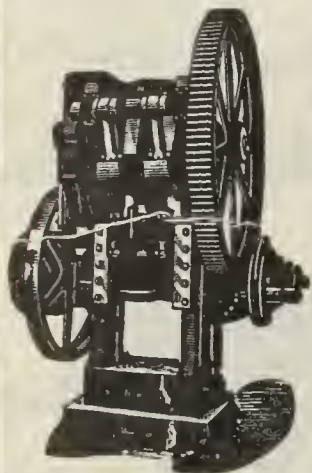
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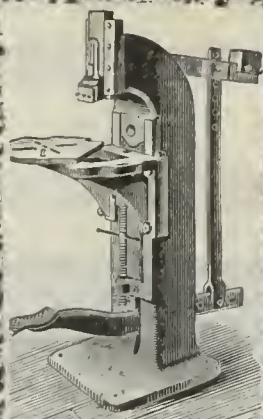
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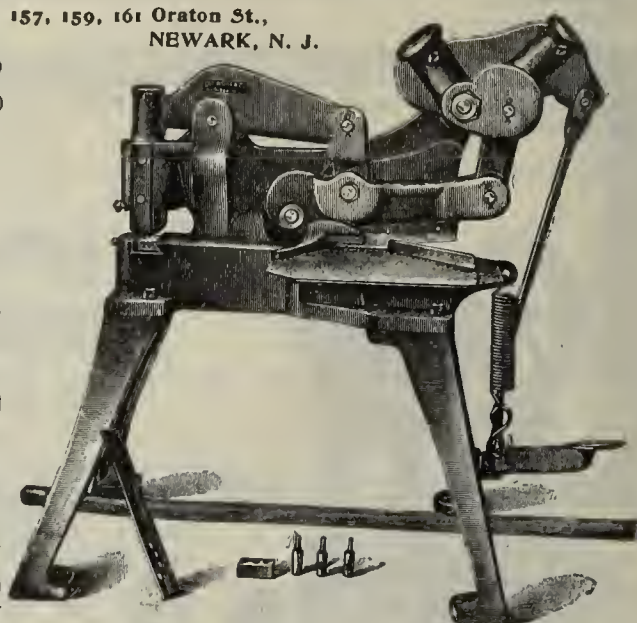
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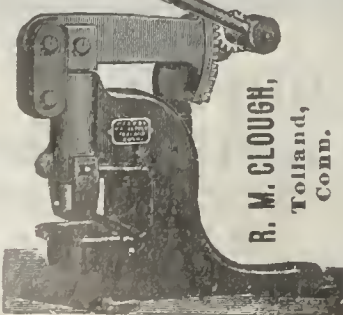


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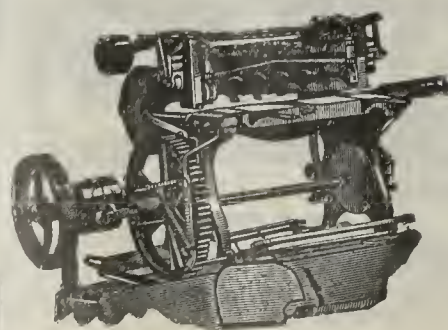
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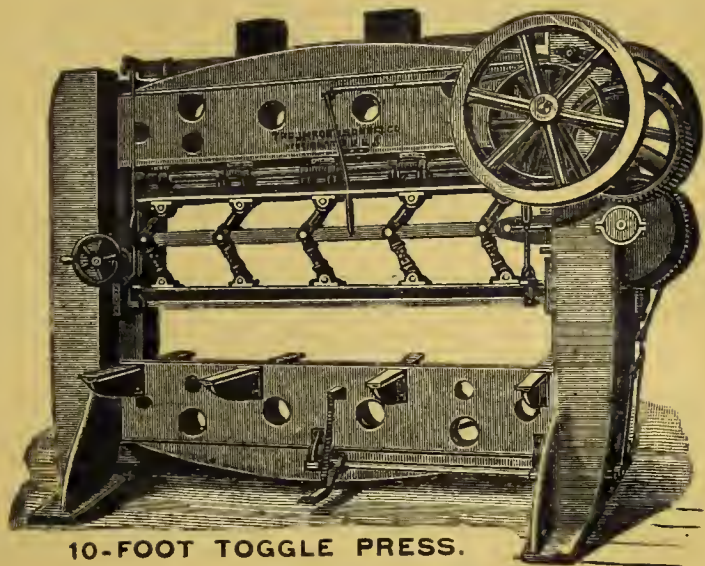
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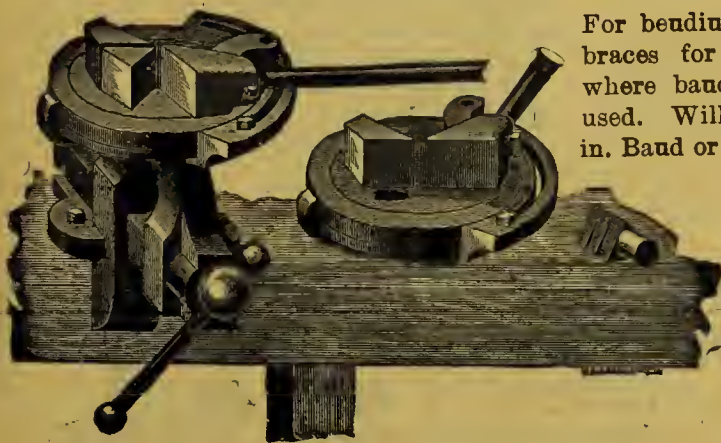
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a man can cut No. 12 steel with one hand on the lever, leaving  
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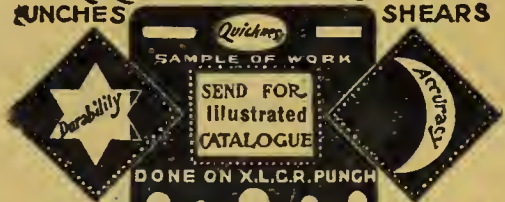
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brand is the  
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A WEEKLY JOURNAL OF THE  
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Don't waste good work  
 a poor galvanized iron  
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 Apollo is good.

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All working parts renewable without taking the valve  
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Insist on having the genuine stamped with Trade-Mark.

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of a fine residence  
on one of the avenues  
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in Chicago  
that contains today  
all ready for winter  
twenty-four tons  
of "egg" hard coal.  
This is the amount  
they have used  
every winter  
to keep about  
"three-quarters warm"—  
"some days  
in the winter  
they couldn't do that."

The old furnace  
has given up the struggle  
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and we propose  
with the  
Round Oak air tight furnace  
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to keep them wholly warm  
and use about  
one-half that coal.  
We would like to hear  
from furnace men  
who are genuinely enthusiastic  
about high class furnace work.

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*With his bow he hunted the deer and the elk  
whose soft skins made comfortable Doe-Wah-  
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IT IS EASIER, USUALLY, TO EARN MONEY THAN TO SAVE IT.  
EASIER, TOO, TO CALL A FURNACE A "SMOKE CONSUMER" THAN TO MAKE IT ONE.  
THIS FURNACE DOES BURN THE SMOKE.

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WILL BURN EITHER FUEL, BUT ESPECIALLY CONSTRUCTED FOR SOFT COAL.  
ALL CAST IRON, VERY EFFICIENT and DURABLE.

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The fire supplies the power, the shape of the magazine applies it. This construction is patented.

**A Perfect Gas and Smoke Consumer.**

This device is unlike any other and provides both cleanliness and economy—it is patented.

**THIS STOVE IS NEITHER A "FREAK" NOR A "SUSPICIOUS CHARACTER"**

It has 7 years of phenomenal success to its credit and is sold with the guarantee of our name and the mark of public approval.

**NO COMPLEX MECHANISM. SIMPLE AS ANY STOVE.** Anybody that can cut kindling, strike a match, and lift a coal hod can run it. Exclusive agencies allowed.

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## Wrought Steel Ranges

FOR 1902-03.

**Best on Earth.**

**Price is Right.**



Have you examined the Fire Box on the Model Line? Have you seen our Patented Oven Door, which does so much to popularize the Model Line with the Trade and Customer? Then there is "the Long Felt Want" kind of Damper, to say nothing of the Oven Construction. These are only a very small portion of the "Special Features" embodied in the Model Line. In the construction nothing but the very best material and mechanical skill attainable is made use of.

Space will not permit of but the briefest description, so send for

**CATALOGUE 10.**

**THE PORTSMOUTH STOVE & RANGE CO.**  
**PORTSMOUTH, O.**

MORLEY BROS., Wholesale Agents for Michigan, Saginaw, Mich.

**The Busiest Makers of Stoves and Ranges in the World.**



# Crawford

## Cooking-Ranges

That single damper we were telling about is a good deal better thing than we thought at first. So many cooks have spoiled their dough by not understanding dampers that the housekeeper takes to the single damper right away.



WE HAVE A LITTLE BOOK ON DAMPERS WHICH WE ARE GIVING AWAY. ✂✂ Have You Seen It?

### Dampers

This book tells about dampers of cooking-ranges

Then there are the "take-off" nickel bands, the common-sense dockash grate, and the usual arguments besides.



### SOME OTHER GOOD ONES

This year's Crawford Oak has a removable skirt, which is easily lifted off when blacking the stove or cleaning the nickel-work. This new feature pleases housekeepers, and makes this Oak an easy seller. ✂✂ The "Cosy Crawford" is a divided-back pipe surface burner, well made, very stylish and attractive.



## CRAWFORD BOILER

for Steam: for Water

This new heater has a deep firepot, triangular grates easily removed, a large one-piece ashpit, corrugated internal surfaces, and malleable push-nipples. ✂✂✂✂✂



Capacities are on our "honest-rating" plan. The prices are low. This heater is being used by some of the best people in the business. ✂✂ Sizes 22, 25, 28 now ready.

WALKER & PRATT MFG. CO., BOSTON  
FINEST STOVE FACTORY IN THE WORLD





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**THE PRIDE OF THE BRIDE**—A new home completely furnished with every convenience is sure to have A **MOORE'S STEEL RANGE** in the kitchen. Not only the reputation of these ranges with previous users, but their neat attractiveness and handiness—which appeal to both the eye and the good sense of the buyer—insure this selection.

—The illustration is from a home recently furnished with Moore's Premium No. 268 Reservoir and Closet.

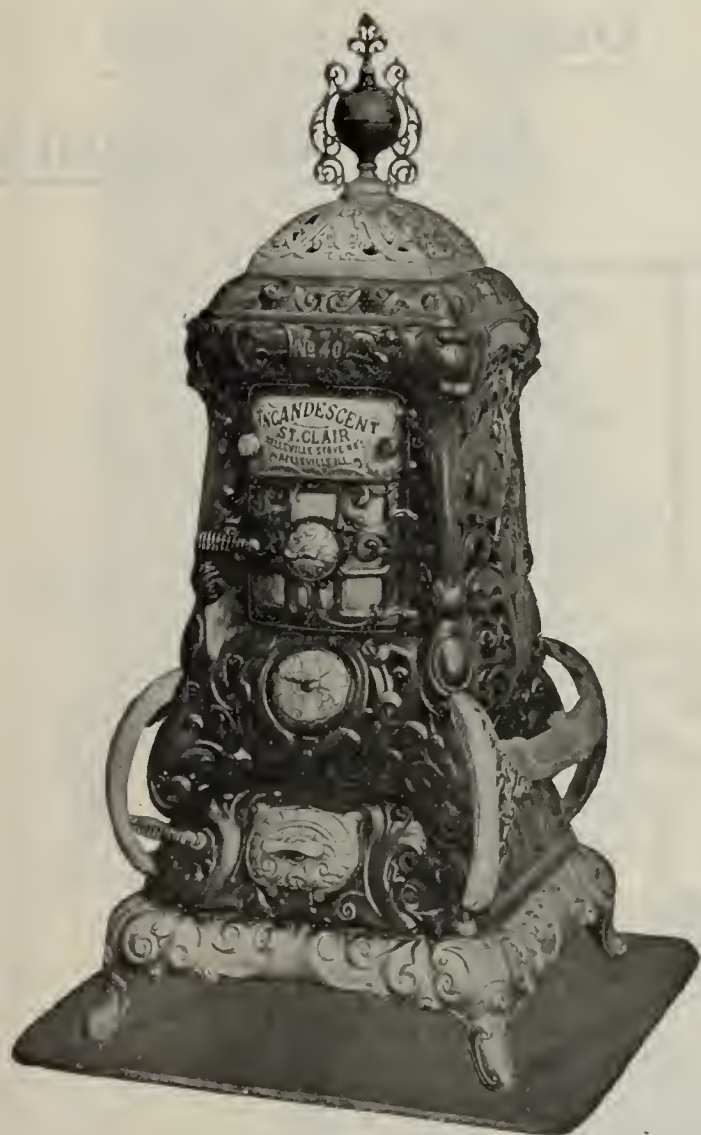
**JOLIET STOVE WORKS, Joliet, Illinois,**

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San Francisco, Sacramento, Los Angeles.



# ST. CLAIR Stoves and Ranges



Incandescent St. Clair Air Tight.



Incandescent St. Clair Oak.



Splendid St. Clair Steel Cook.

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We have a very complete line of Malleable Ranges, Steel Ranges, both single and double oven. Also Cast Cook Stoves and Ranges and Heaters. ♡ ♡ Our 1902-3 Catalogue has just been received from the printer. Will be pleased to send same upon request.

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## Belleville Stove Works

Belleville, Ill.



Just to remind **YOU**, Mr. Merchant,  
that notwithstanding the present demand for "ACORNS" (the  
most gratifying in many years), we are able to ship with reason-  
able promptness popular 1902 patterns of

**Steel Ranges**

**Oak Stoves** THREE  
GRADES

**Soft Coal Air Tights**

**Wood Air Tights**



USED BY MILLIONS

**ACORN  
STOVES  
AND  
RANGES**

HUSBAND: "Wife, what's this string tied on my finger for?"

THE WIFE: "It's to remind you about my New Acorn Range; be sure and get it with you to-night; I want one just like Mr. \_\_\_\_\_, the all cast Range with the square oven."

Acorn Newspaper Electrotpe No. 334  
Free to Acorn Merchants

**RATHBONE, SARD & CO.**

"THE OLDEST AMERICAN STOVE MAKERS"

Eastern Foundries, ALBANY, N. Y.

Western Foundries, AURORA, ILL.

The HARRY UNNA COMPANY, of San Francisco, Pacific Coast Distributors.



# BASE BURNERS

## MARVEL GOLD COIN Ventiduct Base Burner,

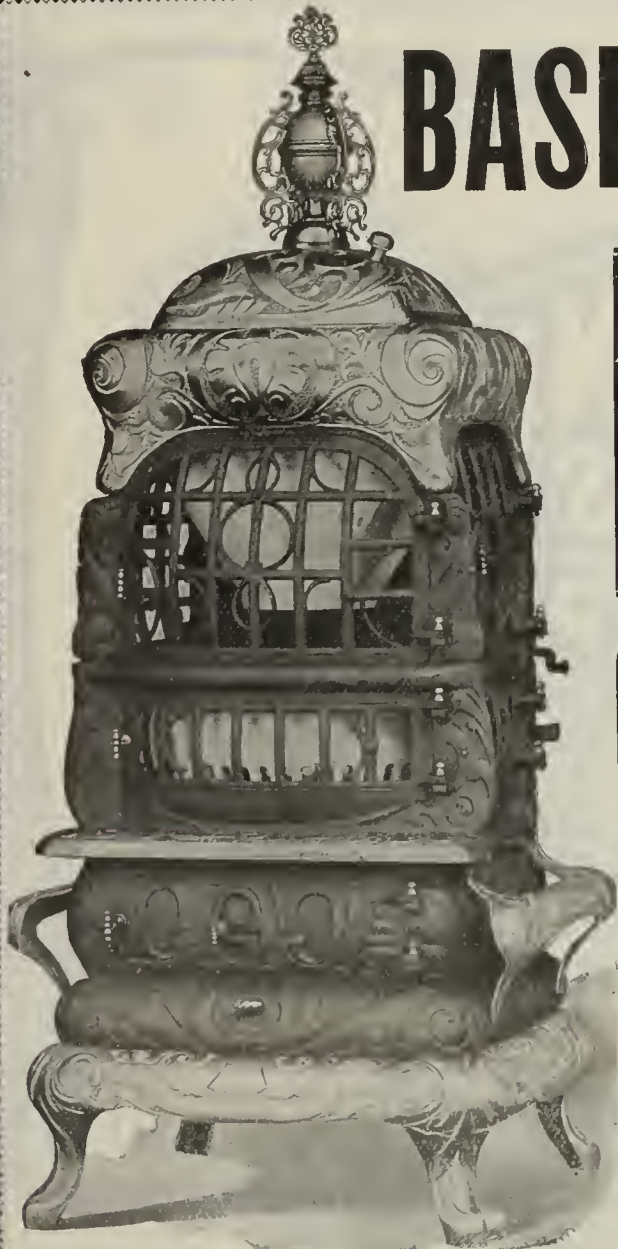
### For Hard Coal,

is a splendid medium priced Base Burner, which embodies all the essential features of our higher grades and is a pleasing design, richly ornamented with full nickel domes, swing cover, name plate, side rails and base and spun brass urn.

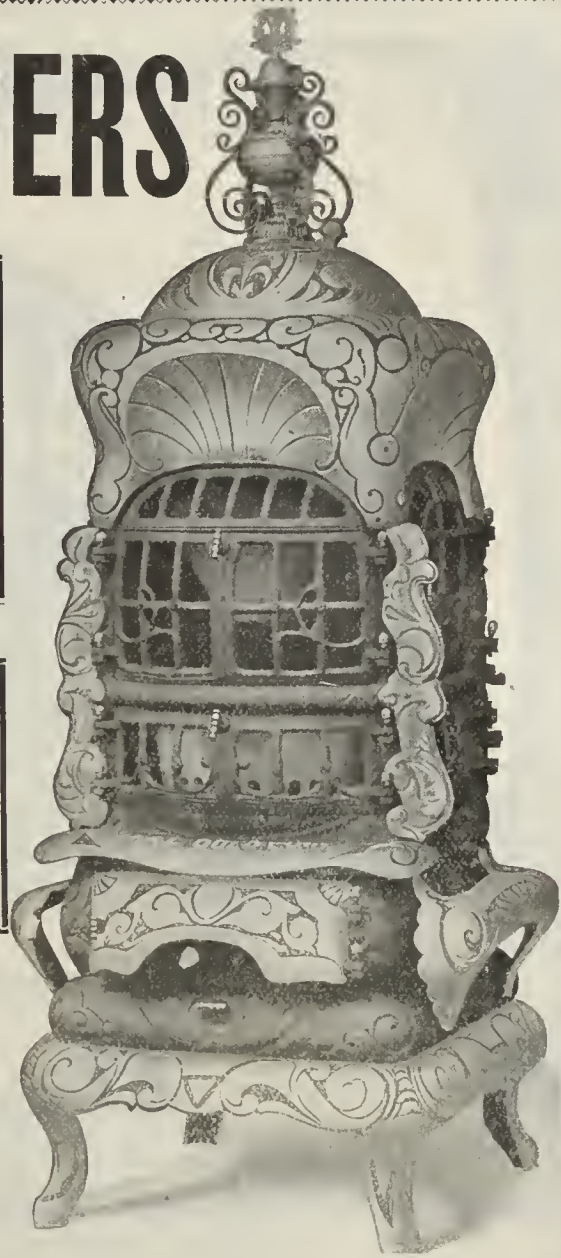
## IDEAL GOLD COIN Ventiduct Base Burner,

### For Hard Coal,

is a stove of handsome proportions, highly finished, full nickeled. A double heater at a price which is bound to make it a big seller.



MARVEL GOLD COIN VENTIDUCT  
BASE BURNER.



IDEAL GOLD COIN VENTIDUCT  
BASE BURNER.

## The Original Gold Coin Ventiduct Base Burner

In its New 20th Century  
Dress,

### For Hard Coal,

is a beautiful and original design, which surpasses anything yet produced in the stove maker's art, and **Excels in Powerful Radiation and Economy of Fuel.**



THE ORIGINAL GOLD COIN VENTIDUCT BASE BURNER.

Manufactured by the  
**Gold Coin Stove Co.**  
TROY, N. Y.

and the

**CHICAGO  
STOVE  
WORKS**

CHICAGO, ILLS.

Send for New Catalog





## Are You Having Trouble To Procure Hard Coal?

If so, you are doubtless looking for a line of Modern and Improved Soft-Coal Burners which you can rely upon in every respect, and which are Cleanly in Operation.

WE CALL ATTENTION TO THE FOLLOWING:

HOT-BLAST,  
SOLAR and  
MAGIC

# Garlands

and our large assortment of soft-coal constructions comprising the most reliable variety on the market.

DO NOT OVERLOOK OUR COMPLETE LINE OF

# Oak-Garlands

At prices to suit any buyer, especially adapted for soft coal and wood.

Please examine our Catalogue and note the many specialties comprised in the very complete line of "GARLAND" Stoves and Ranges. If you haven't a copy of the Catalogue write us.

## Exclusive Agencies Given

### The Michigan Stove Company

Largest Makers of Stoves and Ranges  
in the World

DETROIT

CHICAGO



First Prize, Paris, 1900.



First Prize, Buffalo, 1901.



# THE DANGLER OIL and GAS HEATERS.

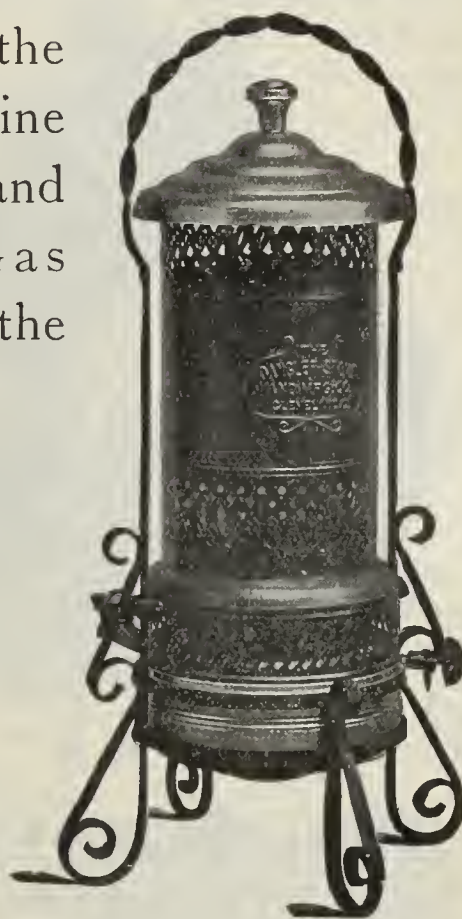


We make the most complete line of Artificial and Natural Gas Heaters on the market.

Ornamental.  
Durable,  
Powerful and  
Simple in  
Operation.

For Sale Everywhere.

Send for Catalogue  
and Prices.



THE DANGLER STOVE & MFG. CO. DIV., CLEVELAND, O.

## GOOD WILL

"UNION MADE"

## STEEL RANGES



Have all the latest improvements, such as Large Feed Door. Duplex Grates which can be removed without disturbing the linings or water front. Large Ash Pit Door and Deep Ash Pan, which is so arranged that it catches all the ashes. The Smoke Box is made of Cast Iron, which in itself is an important feature. The Fire Box Linings are sectional. The Ovens are thoroughly braced and the Bodies fully lined with Asbestos Millboard protected with an inner plate and are boiler riveted throughout.

We furnish the same style with Enameled Reservoir.

Send for Catalog and Prices

Stock Complete. Prompt Shipments Guaranteed

## F. A. KLAINE & CO.

MANUFACTURERS

"Good Will" and "Omaha"  
Stoves, Ranges, Repairs, Etc.

CINCINNATI, OHIO





== 1903 ==

# Reliable Oil Heaters

RELIABLE Oil Heaters have always been conceded Leaders. This season they are finer than ever. TO THE RELIABLE IS DUE THE CREDIT OF THE PERFECTION AND POPULARITY OF THE OIL HEATER TO-DAY. Our Gas Heater line is the largest and most complete. Write for catalogue and prices.

MADE BY

## THE SCHNEIDER & TRENKAMP CO.

CLEVELAND CHICAGO SAN FRANCISCO

SOLD EVERYWHERE

**THE COMBINATION OF AN OPEN FIRE PLACE  
AND A RADIATOR. OUR GREATEST SELLER...**

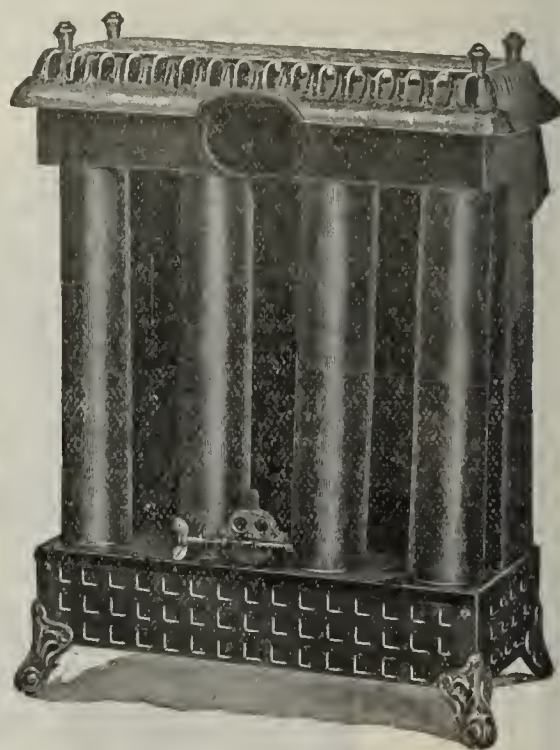
All the heat not directly radiated from the asbestos backwall in ascending enters a top chamber, thence down the two outer rear flues to the lower chamber, and thence up the two middle flues and out. Has cast nickel radiator top, nickel feet, foot rail, corner ornaments and polished brass bottom and side reflectors. Handsomely embossed Russia iron body. Dimensions: Height, 26 inches. Opening, 20 x 18 inches.



(67)

FRONT VIEW.

**Monarch  
Combination  
Heaters  
Nos.  
67 & 68.**



REAR VIEW.

**THE MONARCH STOVE MFG. COMPANY,  
MANSFIELD, OHIO.**

Manufacturers

**MONARCH HEATERS, for Gas Fuel,  
ASBESTOS LINED OVENS, VAPOR STOVES, Etc.**

AGENTS:

H. R. BRUCE & CO., 228 Main St., Cincinnati, O.

A. L. CANFIELD, 284-6 Pearl St., New York.

R. E. EDMONDS, 203 Wood St., Pittsburg, Pa.

W. H. GRUENHAGEN, St. Anthony Park, Minn.

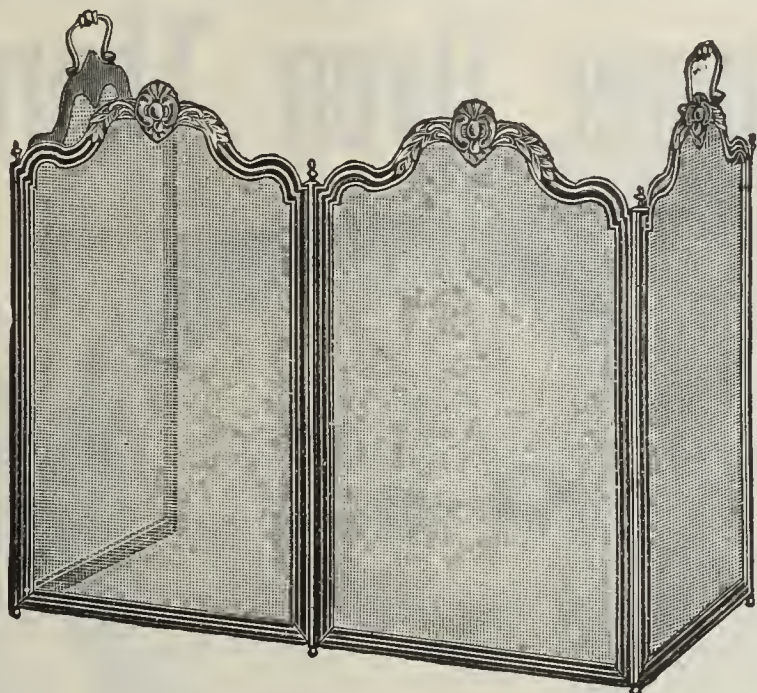


## FRENCH FOLDING SCREENS FOR FIRE PLACES

We are the only manufacturers of this line in the United States.

*Send for Our Prices  
Before Importing.*

Our screens are heavier, smoother finished, and generally better than the imported article.



Finished in pure brass, gilt, lacquer and Berlin black.

Screens made in the following heights: 18, 20, 26 and 80 inches.

A large variety of styles.

Send for catalogue of  
**Fire Place Goods**  
made of brass, wrought iron and cast iron.

The S. M. HOWES CO., Manufacturers, 42-44-46 Union Street, BOSTON, MASS.

## Up-to-date Air-Tighters.

WE WANT YOUR BUSINESS!

Our Goods are Strictly  
**HIGH-GRADE and DURABLE.**  
We make 65 Styles and Sizes of  
**AIR-TIGHT HEATERS.**

Our Heaters are made of Blue Polished Steel, Superior Finish. Best Proportioned Stoves Made. Our Castings are Smooth. Our Mounting is Perfect.

We also make the "Noxall"  
Steel Cook for Wood and Coal.  
Has Perfect Square Aluminized Oven.

Large Capacity. Prompt Shipment Guaranteed.

**QUINCY FOUNDRY  
& NOVELTY CO.,**  
QUINCY ILL.

Write for Catalogue and Prices.



## Natural Gas is Cheaper Than Coal,

Providing You Use the Proper Appliances.

We will send you our No. 36 Catalogue, showing over one hundred different designs of Gas Stoves and Ranges that are economical and efficient, for the asking.

**H. ADLER COMPANY,**

Manufacturers of Acme Gas Stoves and Ranges,  
**PITTSBURG, PA.**





# The Cooper Oven Thermometer

The First, Best and only thermometer ever used on stove oven doors which is of any real value to those who do baking. This is no loose advertising talk, but statements easily verified by facts.



FULL SIZED CUT OF DIAL.

Many of them have been in constant use thirteen years, and many thousands of them from eight to ten years. Used by over forty manufacturers of the highest grade ranges in the U. S. and Canada.

Since the use of the Cooper Thermometer has shown the necessity for such an instrument on oven doors, within the past five or six years there have been some half dozen devices put on the market called oven thermometers.

They do not deserve to be so-called.

Their bad working is depopularizing the name of oven thermometer with the public, who do not understand the difference between them and a good one.

Fortunately, unlike a watch, their value can easily be known by their faces.

Twenty degrees difference in the temperature of an oven, is sufficient to make "good luck," or "bad luck" in baking many kinds of food.

Unless an oven thermometer will plainly indicate such change, by a movement of the hand sufficient to be easily seen, such thermometer is positively worthless, by which to regulate the fire and heat of the oven. An attempt to use them for that purpose only produces disappointment and disgust, more or less of which attaches to the stove on which they are used. Between normal temperature, and extreme baking heat, there is a difference of 325 to 400 degrees. If for such a change of temperature, the whole movement of the hand of an oven thermometer is only two or three inches, it is plain that with a change of 20-30 or even 40 degrees, the movement of the hand would be too slight to be noticed by those who usually do baking, at least without a magnifying glass, which is not commonly used in a kitchen. The hand on the Cooper thermometer moves over six inches with such change of temperature, plainly shows a difference of 8 or 10 degrees in the heat of the oven, and even 2 degrees can easily be seen, by a slight knock on the oven door.

Next to good working durability is the most valuable quality in an oven thermometer. Thirteen years of satisfactory working is a very good record for the Cooper thermometer. Not being obliged to increase the radius of the hand in order to give it sufficient movement to be noticed, the dial on the Cooper thermometer is only as large as is necessary to be plainly seen by those using it, thereby making the danger of breaking much less than if it had a larger diameter. Those who use them do not say they "Do not think an oven thermometer amounts to much, anyway." The most common expressions of those who use the Cooper thermometer, is "I would not try to keep house without my oven thermometer," or "I don't know how I ever got along without it."

It is easily adjusted to either a swing or drop door, and is the best selling point ever put on a stove or range. However highly it is praised by the seller, it is more than verified when used. Do not buy a worthless article because it can be bought for a few cents less. It is sure to be far more costly in the end. An honest tile is preferable to a "make-believe" oven thermometer.

The price of the Cooper thermometer is very low indeed, when cost and value are considered.

Every thermometer carefully adjusted, and tested by heat, before sending out.

Manufactured and Sold by the Inventor

D. G. COOPER

-

Pequabuck Conn.

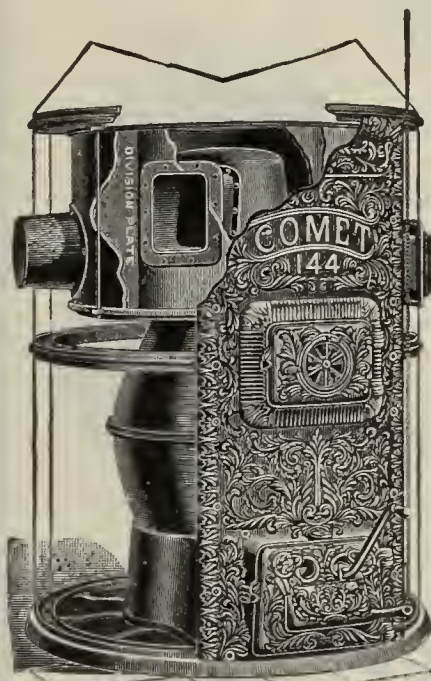


# THE STAMFORD FOUNDRY COMPANY

## FURNACES, RANGES AND STOVES

THE OLDEST STOVE FOUNDRY IN AMERICA

SINCE 1830 MAKERS OF CELEBRATED

THOUSANDS IN USE 1000 IN A SINGLE CITY  
RECORD EVERYWHERE ESTABLISHED*References to Some of Our Furnaces, Now and Through  
Past 25 Years in Continuous Service*

COMET Heavy Steel Drum

Both furnaces are well made—all exposed parts heavy. A generation of constant service establishes their record for durability, economy, powerful heating, easy to set, simple to operate.

The radiator of the STAMFORD ALL CAST FURNACE is a combined dome-tubular and cylinder construction of immense capacity and heating power.

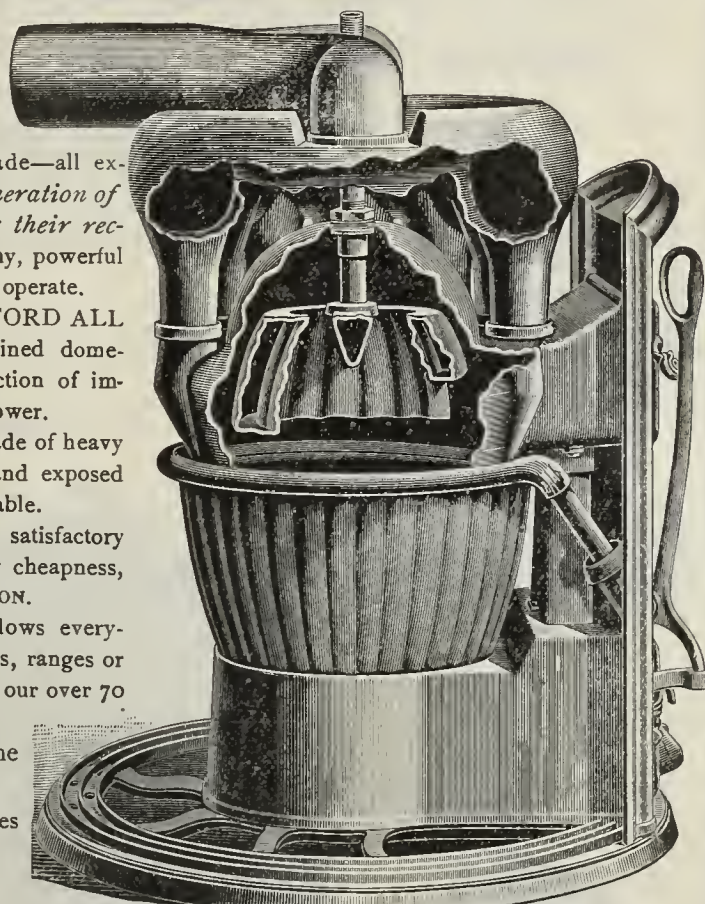
The COMET radiator is made of heavy cold rolled steel. Fire pot and exposed parts especially heavy and durable.

The COMET is made for satisfactory service and not for PRESENT cheapness, ENDING IN EARLY DESTRUCTION.

OUR GUARANTEE follows everything we make, whether stoves, ranges or furnaces, and is established by our over 70 years' record.

Also an elegant and new line of OAK STOVES

Send for Catalogue, Capacities and Prices



STAMFORD COMBINATION HEATER

HOT AIR AND HOT WATER OR HOT AIR ONLY, AS ORDERED

The above cut shows interior form of water section, giving an idea of its great heating surface and consequent power.

THE STAMFORD FOUNDRY COMPANY  
STAMFORD, CONN.

## ARTISTIC ENAMELED STEEL RANGES

*The only Enameled Ranges on the market to-day.* Are not to be confused with the Black Japan and so-called baked enameled ranges which will burn off and rust. Our Enamel being fused with the iron is guaranteed rust and fire proof.

*The Highest Grade of materials* only are used in the construction of our ranges and our Enameling Process is the only successful one.

An ornament to the kitchen and a delight to the housekeeper because so easily kept BRIGHT and CLEAN by use of soap and water, doing away with the objectionable stove polish.

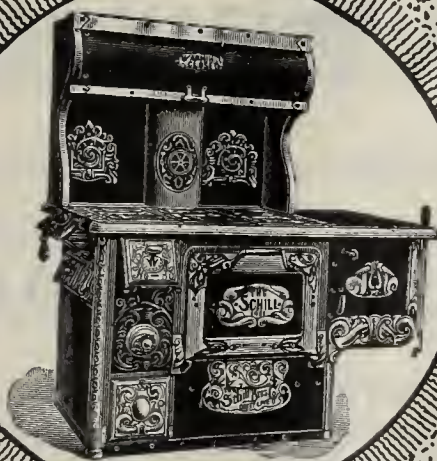
An attractive line and ready sellers. Send now for Illustrated Catalogue.

**The St. Louis Enameling Company,**  
S. E. Cor. Ninth and Monroe Streets, ST. LOUIS, MISSOURI.

We do enameling of specialties and our line of Enameled Steel Signs cannot be excelled.



**The  
New  
Schill  
Range**



THE most modern and up-to-date Range made to-day. Possesses a number of special features found in no other Range. It must be seen to be appreciated. We make them in all the usual styles and sizes. Write for descriptive catalogue and prices to the trade.

**The  
Schill Brothers  
Company,  
Crestline, - Ohio.**

The Nelson & Bouquet Hardware Co., Minneapolis, Minn., Northwestern Agents. J. C. Shanks, 1547 Wazee St., Denver, Colo. H. A. Potter, 35 Montgomery St., San Francisco, Cal. Chas. H. Greene, 5085 Fairmount Ave., St. Louis, Mo.



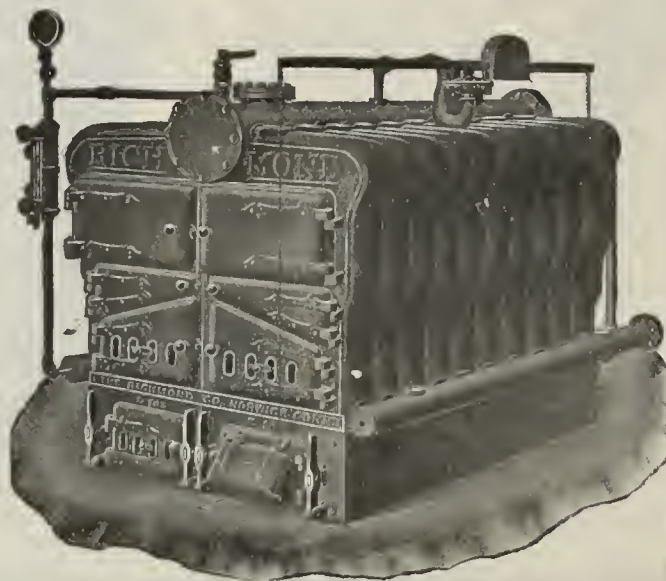
Why should you postpone another day  
informing yourself fully about the good  
points of . . . .



Series D-18



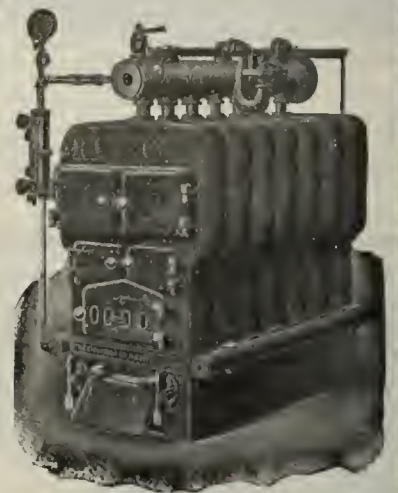
Series 418-427-B



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Series 518-527-X



Series D-21

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TO ASK FOR PRICES ALSO.

**THE RICHMOND COMPANY, NORWICH, CONN.**

NEW YORK, 738 Park Row Bldg.    PHILADELPHIA, 18-24 So. 7th St.    PITTSBURGH, 210 Ferguson Bldg.    CHICAGO, Chicago Heater & Supply Co.    ST. LOUIS, Rumsey & Sikemeier Co.



**THE H.B. SMITH CO.,**  
**WESTFIELD, MASS., U.S.A.**

Catalogue furnished only upon application to  
**Heating Contractors, Engineers and Architects**

92 Pages. Size 9 x 12 Inches.

**COTTAGE  
BOILERS.**

STEAM BOILERS (8 SIZES), 550 SQ. FT. RADIATION SUPPLIED.  
WATER BOILERS (8 SIZES), 900 SQ. FT. RADIATION SUPPLIED.

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SALESROOMS :

**THE H.B. SMITH CO.,**

**133 CENTRE STREET,**  
**NEW YORK.**

**510 ARCH STREET,**  
**PHILADELPHIA.**





## THE NEAREST WAY

to your customer's heart is through his coal bin. The average man worries about his winter coal bill all through the year.

Every man who is furnace hunting has two objects in view:

To buy the furnace that consumes the least coal.

To buy the furnace that gives the most comfort in his rooms.

Every dealer will assure him that this furnace or that furnace will meet these demands. He realizes he must take somebody's word for it. He can't satisfy himself by looking at a furnace. He must buy it and then abide by the consequences.

There is a different furnace. It is the Peck-Williamson Underfeed Furnace. It shows in itself what it is. You can point out, and prove beyond a doubt, to your customer the pure and simple reasons why this furnace burns less coal and gives greater heat—

### More Heat at One-Half or One-Third the Coal Cost.

In this furnace the combustion is not forced in the slightest. The coal is fed from underneath. The fire eats down into it, consuming the heat generating properties of the coal as fast as they are liberated. This heat is retarded by the upper layer of incandescent fuel. Every atom of coal, therefore, does its full share toward heating the air that goes into the rooms instead of out, through the chimney, into the blue sky.

By the same principle the smoke nuisance is entirely done away with and the coal lasts longer.

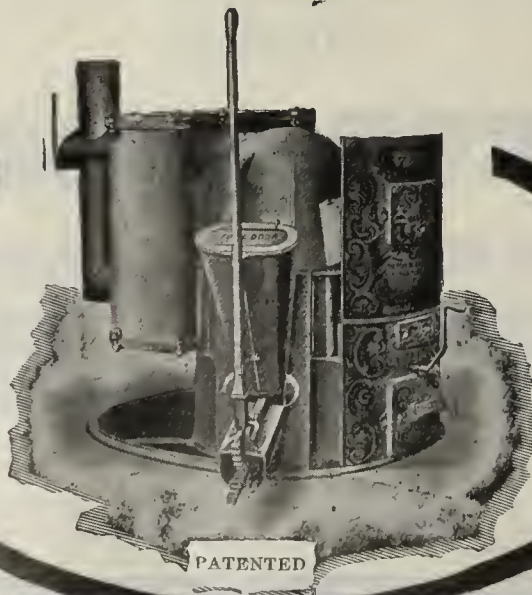
You can prove these things to any thinking man. He can see these things with his own eyes. It is a money-saving and a comfort-dispensing furnace which has no equal.

A slight movement or two of the lever is all that is needed to feed in the fresh coal.

You should have our attractive booklet. You can't afford not to read it any more than you can afford to let your competitor sell the Peck-Williamson Underfeed Furnace.

We've another book. It's about the **Peck-Williamson Laundry Dryer**. Ask for it, too.

**The Peck-Williamson Company**  
CINCINNATI.

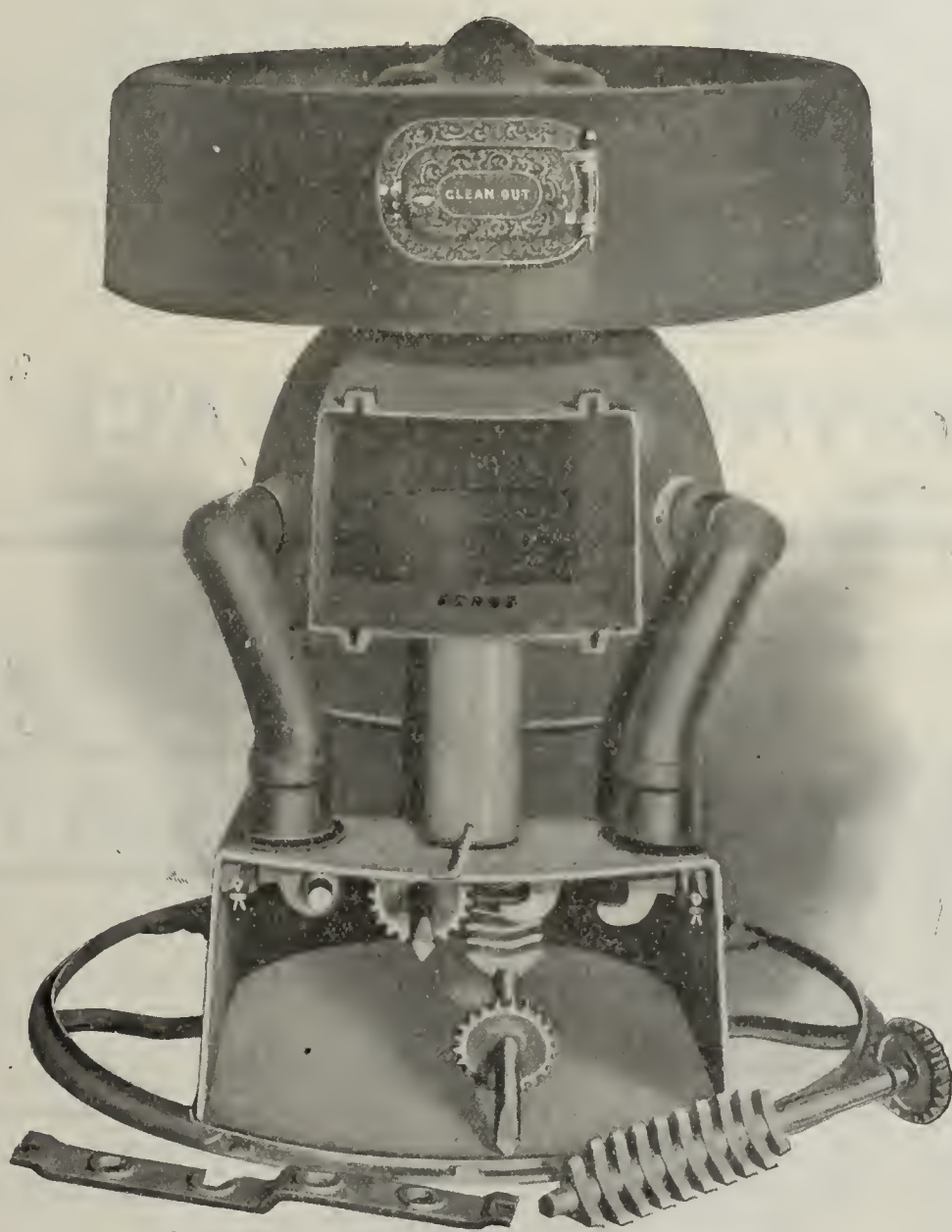




# SUPERIOR FURNACES

were without an equal on September 27th, 1886, and they are without an equal to-day—September 27th, 1902.

*SIXTEEN YEARS OF SUPREMACY.*



Best  
for  
Soft Coal,  
Hard Coal,  
Coke,  
Wood  
or  
Natural  
Gas.

Adapted  
for  
All  
Climates  
and  
for  
All  
Fuels.

## Superior Hot Blast Furnace

BEST SOFT COAL HEATER ON THE MARKET.

Write us for full information, discounts, exclusive agency and our new catalogue—just out. . . .

CHICAGO:  
33 Dearborn St.

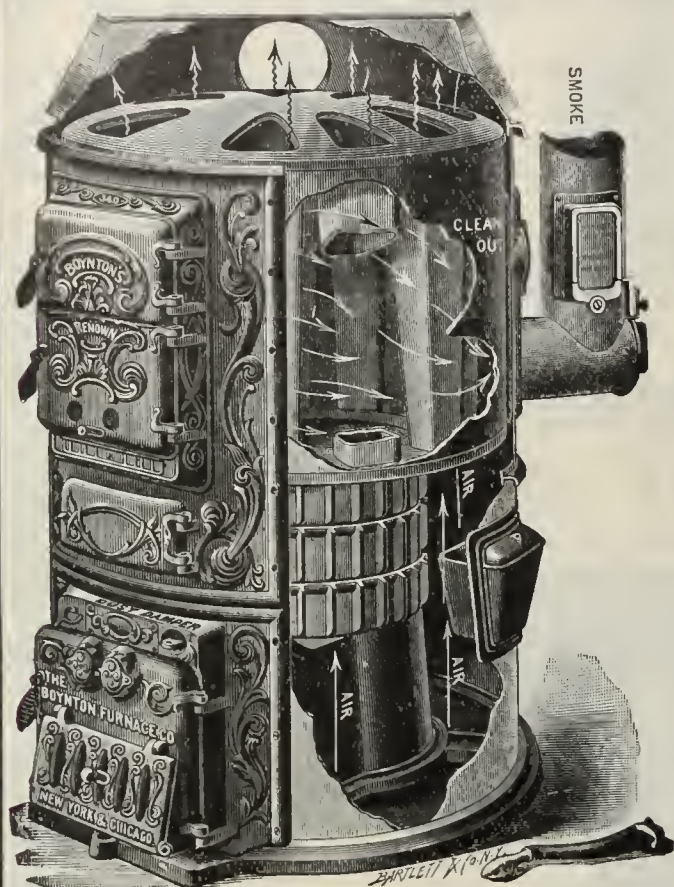
**UTICA HEATER CO.,**  
UTICA N. Y.

NEW YORK:  
106 Beekman St.



# BOYNTON'S "RENOWN"

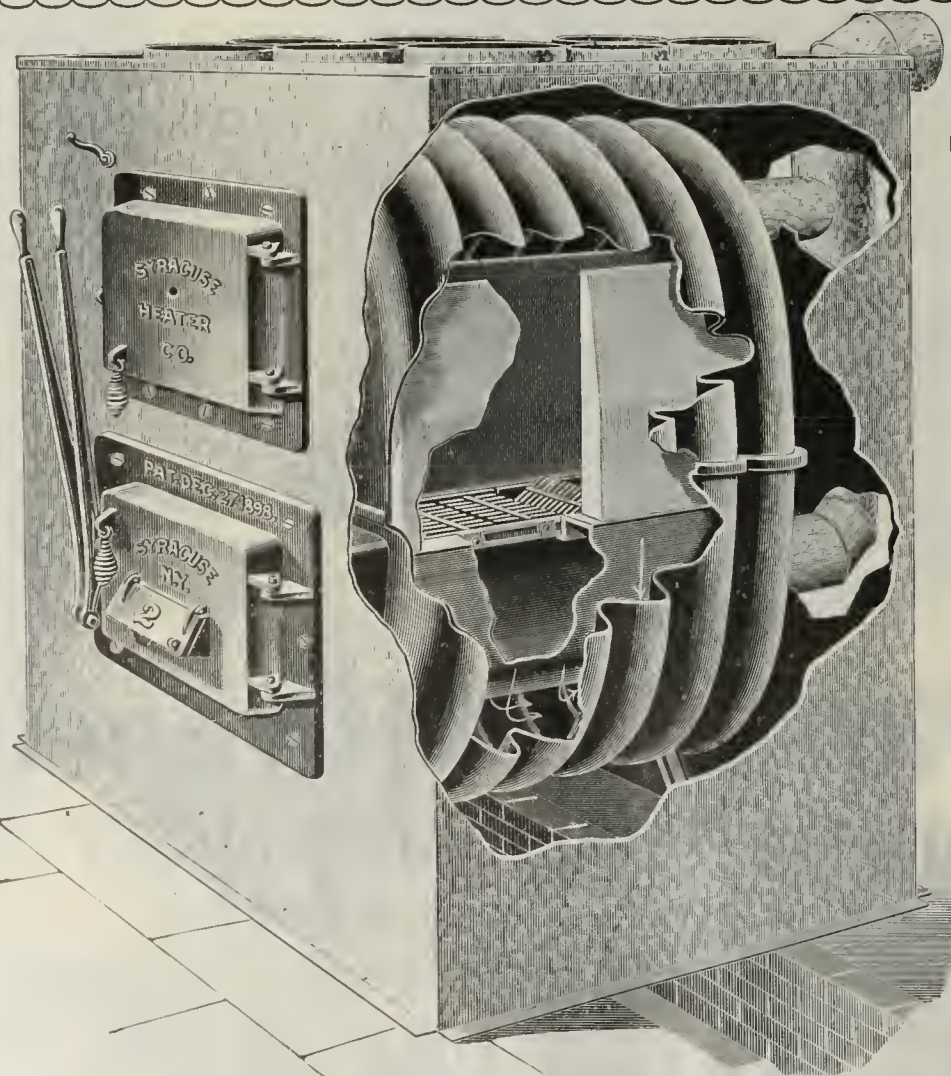
## PORTABLE FURNACE



**A** NEW and distinct type of construction thoroughly tried and tested. Possessing more area of heating surface to area of grate surface than any other furnace manufactured.

Notice construction of cast iron heating flues, each one directly over and in contact with fire. Can we mail you catalogue and prices?

*The* **BOYNTON FURNACE CO.,**  
NEW YORK. CHICAGO.



**"SYRACUSE"**

## SYRACUSE HEATER

The Heat Producer and  
Fuel Saver of the Age

## Hard or Soft Coal Burners

Well Adapted for Wood

Practically Indestructible  
Cupola Brick Fire Pot.  
Can be placed in position  
through feed door. Warm Air  
Furnaces and Combination  
Heaters patented by C. D. Howard.

Manufactured by  
**Syracuse Heater Co.**  
SYRACUSE, N. Y.

Send for our new Catalog.





Zenith Flue Box Base Radiator.

## OUR ZENITH PATTERNS OF RADIATORS

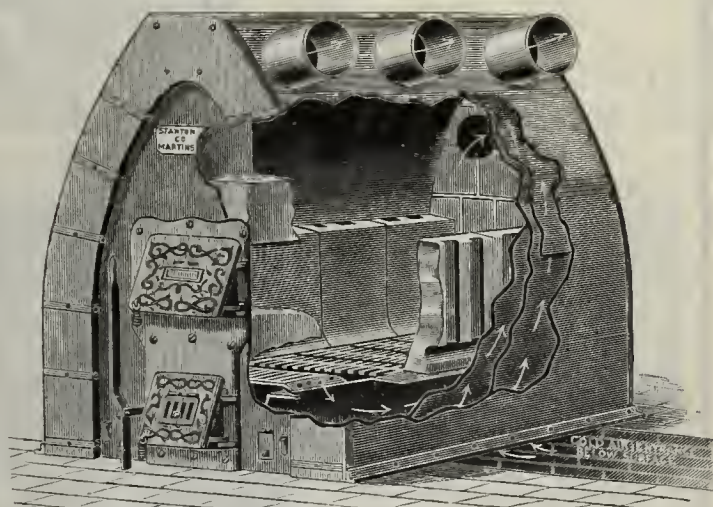
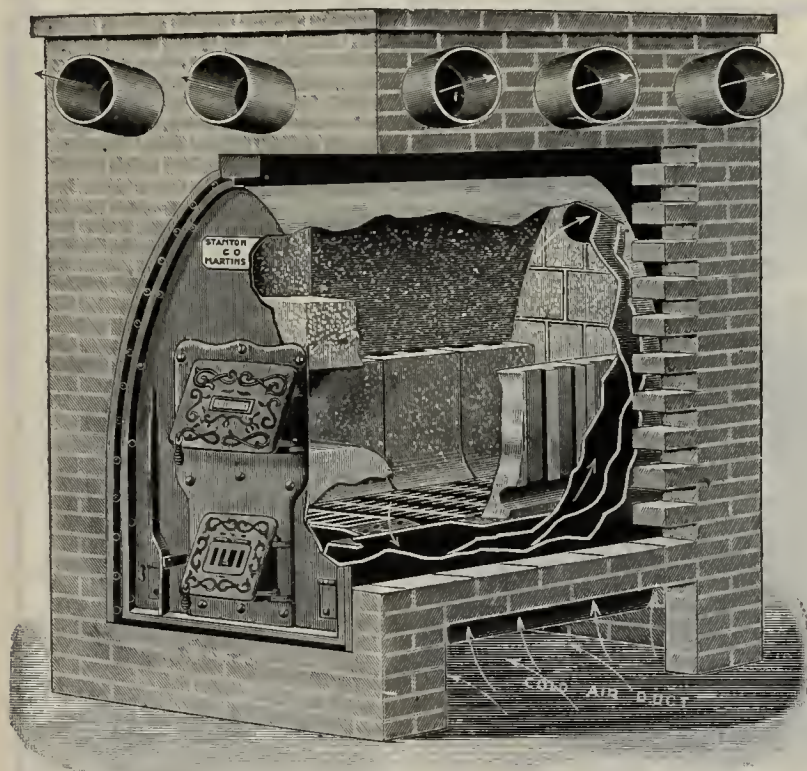
are used in Park Row Building, New York; Stock Exchange, Hotel Touraine, Hotel Marie Antoinette, Bank of New York, St. James Building, Barnard College New Buildings, D. O. Mills' Hotels Nos. 1 and 2, W. W. Astor Apartment Building, all of New York City; Forts Hancock and Wadsworth; P. O. Building, Washington, D. C.; Union Station, Pittsburgh; Broad Street Station and Arcade Building, at Philadelphia, etc., etc., etc. These Radiators may therefore be said to have secured the endorsement of a large number of the most prominent heating engineers in the United States.

Send for New 1902 Catalog.

**AMERICAN RADIATOR COMPANY**

Lake and Dearborn Streets, CHICAGO.

New York. Boston. Philadelphia. Buffalo. St. Louis. Minneapolis. Denver.

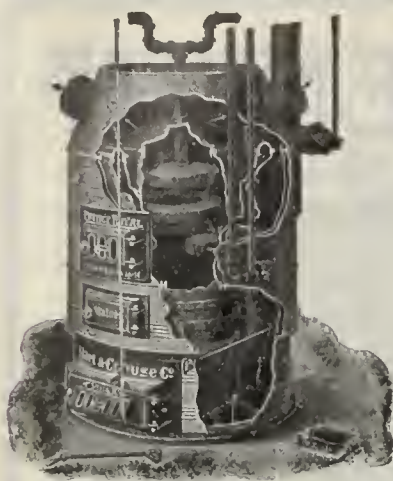


We make five sizes, both 'portable cased and for Brick Setting. Suitable for the largest as well as smallest buildings. For mechanical as well as gravity systems.

Keep Your Eye on this Space. Write for Catalogue.

**THE STANTON HEATER CO.**  
**MARTIN'S FERRY, OHIO**





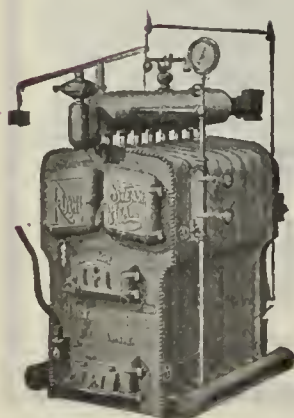
# Royal Heaters.

**HART & CROUSE CO.,**

235 Water St., 78 Lafayette St., 79 Lake St.,  
New York. UTICA, N. Y. Chicago.

The Leading Line of Heating Apparatus.

**HOT WATER,  
STEAM,  
HOT AIR.**



# BENGAL REASONS.

It is the original LOW DOWN ALL CAST FURNACE.  
Burns Bituminous Coal or Coke perfectly.  
The Price is Right.

A WORD FROM YOU WILL BRING OUR BOOKLET.

**FLOYD, WELLS & CO., Royersford, Pa.**

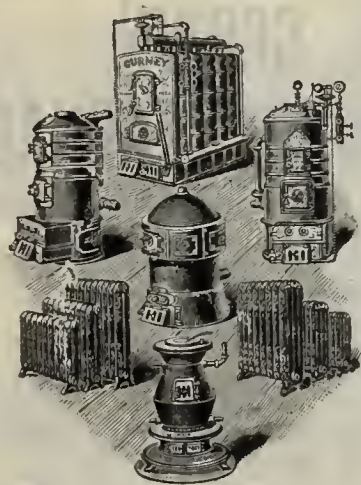
NEW YORK OFFICE, 210 WATER ST., R. W. HILLMAN, Manager.

Eastern Selling Agents:

**GURNEY & CO.,**

Washington, Hanover and Elm Streets. Boston, Mass.





*"An honest tale speeds best being plainly told."*

Here it is.

## "GURNEY" HEATERS

BRIGHT IDEA, DORIC and "400 SERIES"

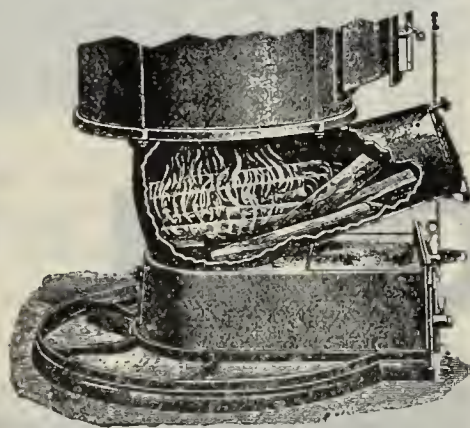
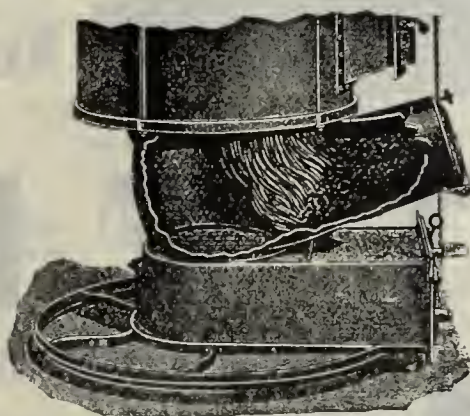
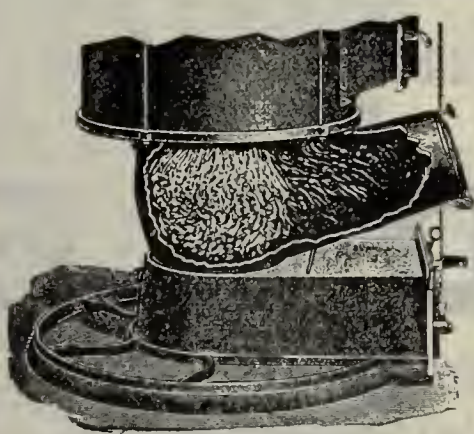
last longer than others, are easier to operate, save in the coal bill and cost no more than many unreliable heaters. Spread this simple story among heater buyers and you won't lack for business.

### GURNEY HEATER MFG. CO.,

Head Office—74 Franklin St., BOSTON.

New York Branch—111 Fifth Ave., NEW YORK CITY.

Western Selling Agents, JAMES B. GLOW & SONS, 358 Franklin St., Chicago, Ill.



### THREE PRACTICAL USES

to which the *Combination* Fire Bowl and *Coking Magazine* used on the **PATRIC FURNACE** may be put.

The first cut shows soft coal undergoing coking process in magazine, with coked coal in main bowl. A *great fuel saver*. Second cut illustrates fire carried only in magazine, for light Spring and Fall heating, a *great convenience*. Third illustration shows furnace used for wood. A *success for twenty years*.

SEND FOR NEW ILLUSTRATED CATALOGUE.

**THE PATRIC FURNACE CO., = Springfield, Ohio.**



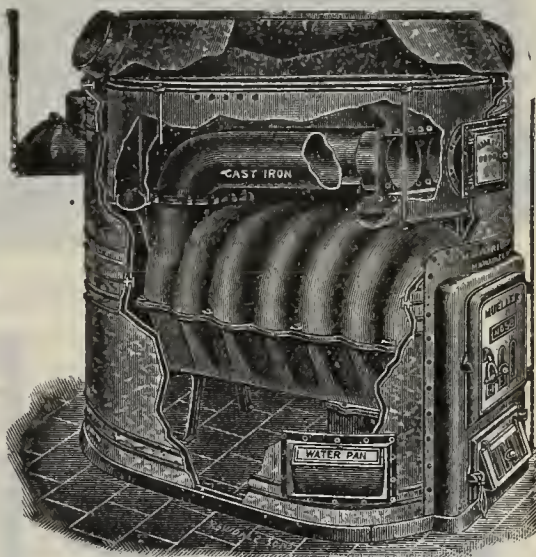
For Hard or Soft Coal.

### What We Don't Make

IN THE LINE OF  
GOOD FURNACES

### Is Not Worth Making.

Send for Catalogue and note the extensive line of Heaters we manufacture. Will burn all kinds of fuel.



For Long Wood.

EVERYTHING IN THE HEATING LINE.

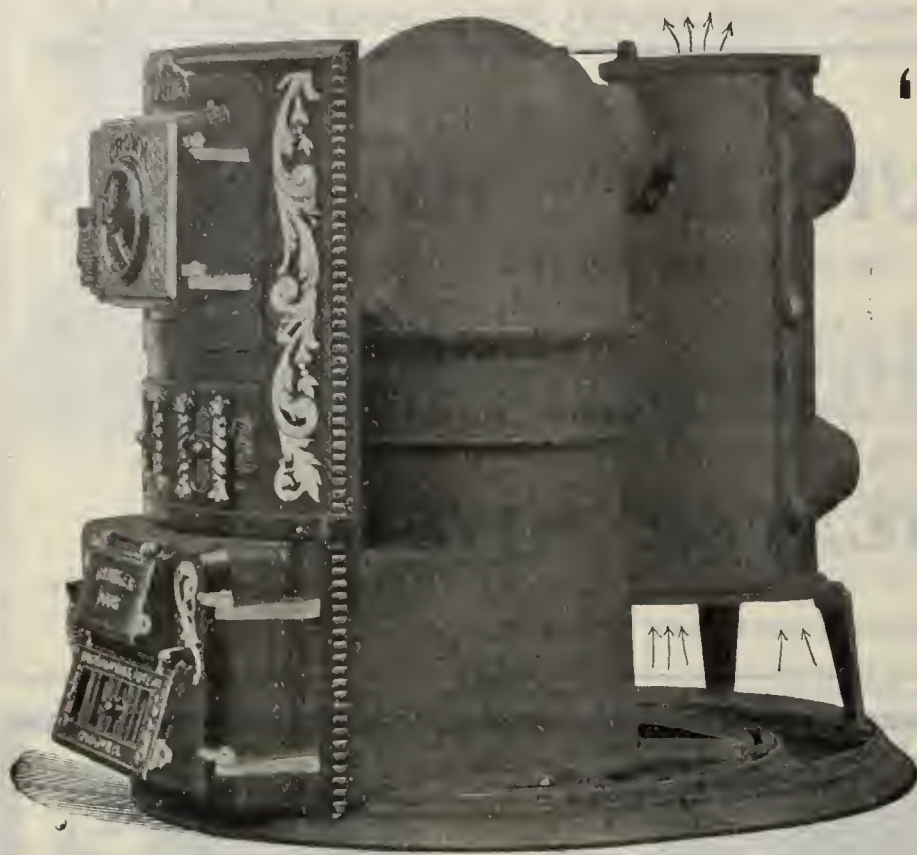
ESTABLISHED 1857.

### L. J. MUELLER FURNACE CO.,

190 REED STREET,

MILWAUKEE, WIS.





## THE CROWN "LOW DOWN" FURNACE

Competes with Steam and Hot Water Heating.

1st—In heating at long distance.

2nd—In an economical consumption of fuel.

OUR CROWN LOW DOWN FURNACE IS  
**SUPERIOR TO STEAM AND HOT WATER.**

1st—In its simplicity of management, any ordinary help can manage this furnace.

2d—In its economy of repairs, repairs being only needed at long intervals, the skilled mechanic not required to repair this furnace.

3d—*Most important of all* is the purity of air supplied. It's the ideal sanitary house heating construction. Any one caring for the good health and comfort of the home should not fail to examine this furnace before installing any other system of heating.

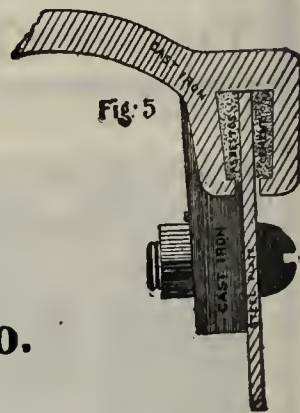
**March-Brownback Stove Co.**  
POTTSTOWN, PA.

# GILT EDGE



stands for best when applied to furnaces. The many dealers who have installed and the thousands of householders whose homes have been heated by our furnaces show they like the Gilt Edge, as will be seen by the testimonials they have written. Let us send you a few of them.

The Keystone Joint used in Gilt Edge Furnaces is the only permanent gas tight steel and cast iron joint on the market.



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Economical in Fuel.

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Furnished for either Brick or Galvanized Iron Casing

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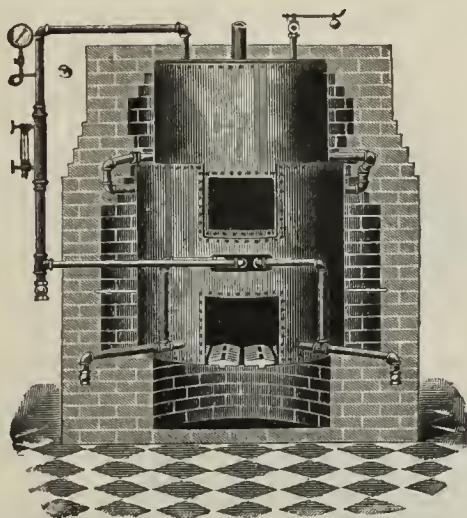
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STEEL CONSUMING

THE HEAVIEST STEEL FURNACE MADE.

Absolutely gas and dust tight. A great heat-producer  
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**"The Handy Furnace Pipe."**

MADE WITH A VIEW OF BEING SAFE.

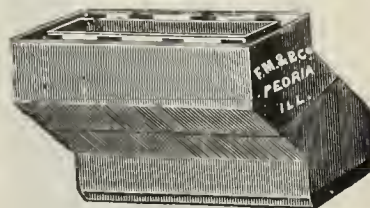
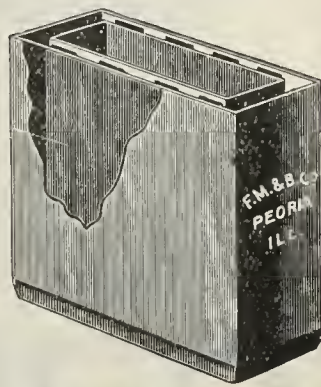
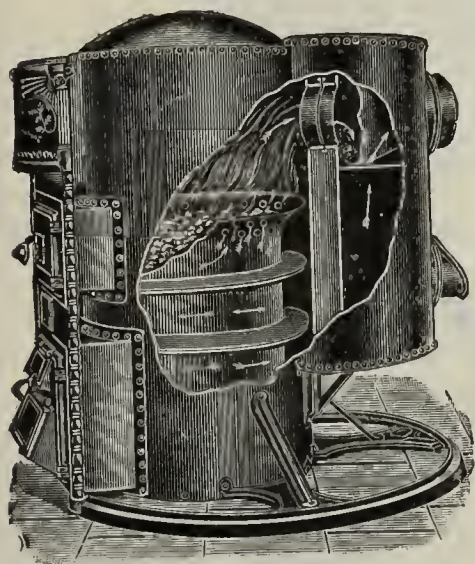
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THE 400 SERIES  
**QUAKER FURNACES**

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MADE IN THREE SIZES.

PORTABLE OR BRICK SET.

Your dealer can erect it in your basement quickly and at small expense.

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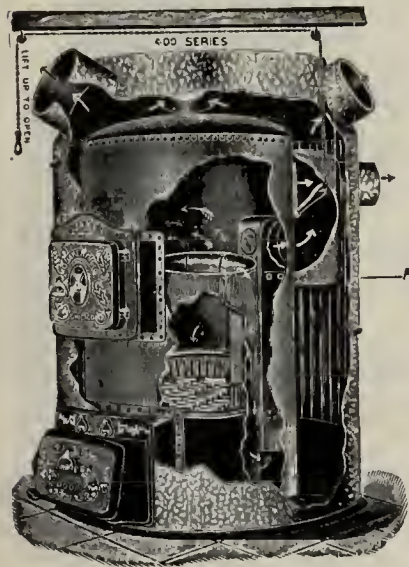
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Successors to WIRETON HEATING CO.

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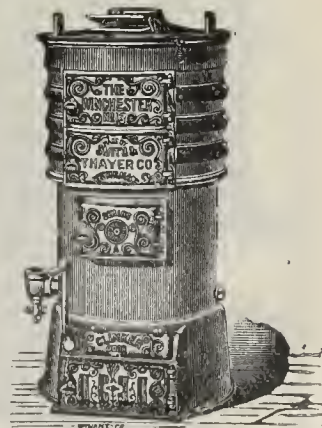


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Oh! I have roamed o'er many lands,  
And many heaters seen;  
For making heat the "Winchester"'s  
Ahead of all, I ween.

Don't look any further for your steam or water heaters. The "Winchester"  
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OLD LYME, CONN., January 15, 1902.

DIGHTON FURNACE CO., Taunton, Mass.

Gentlemen:—I suppose it is time something was said about the "Dighton" Furnace you put in the church at old Lyme.

I am the janitor of the church, and I must say your furnace is giving great satisfaction and I have no trouble in heating the building. We have had some cold Sundays since the furnace was put in, but I was able to keep the temperature over 70° without putting on any draft or pushing the furnace any at all. I must say it is one of the best furnaces I ever saw. It combines simpleness, cleanliness and efficiency, which I think cannot be equaled by any other at present.

If I wanted to go into details about it, I could tell you some of the things it has done, but I will relate one. One Saturday night I did not put on a large fire, but just enough, I thought, to keep it going until morning. During the night a change came and in the morning the wind was blowing a gale from the north, with the temperature 6° above zero.

I got to the church at 8 o'clock and found the fire dead out and the church temperature just 34°. I dumped the fire and started a new fire and put on full draft, and by 11 o'clock, when service commenced, the temperature was 68°, and by 12 o'clock I had to open the doors.

If this is any use to you as a testimonial, do not hesitate to use it.

Yours respectfully,

JOHN KANE,

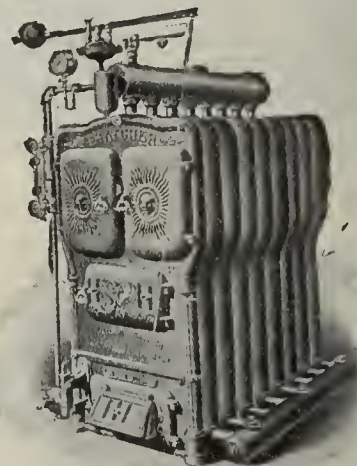
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Established 1850.

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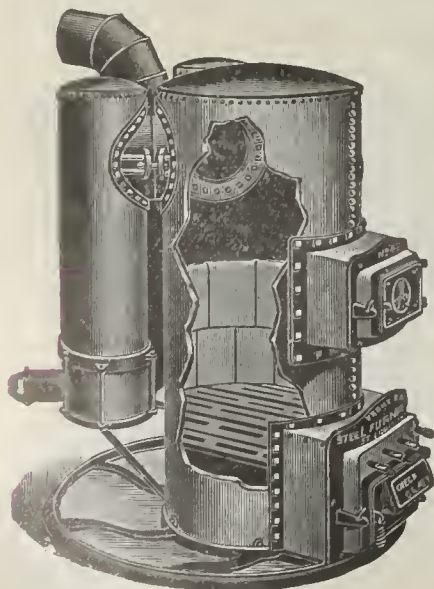
USED EVERYWHERE.

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### A FEW POINTS OF SUPERIORITY



**F**ire pots are of fire clay tiling and never burn out.

**R**adiator surface in proportion to grate surface unusually large.

**O**nly absolutely gas tight furnace made.

**N**ovelty of construction makes an easy seller.

**T**ested for fifteen years.

**R**epairs are seldom necessary.

**A**re guaranteed to burn hard or soft coal.

**N**o direct draft to warp out of shape, nor packed joints to leak gas.

**K**atalogue and prices will be mailed you upon application.

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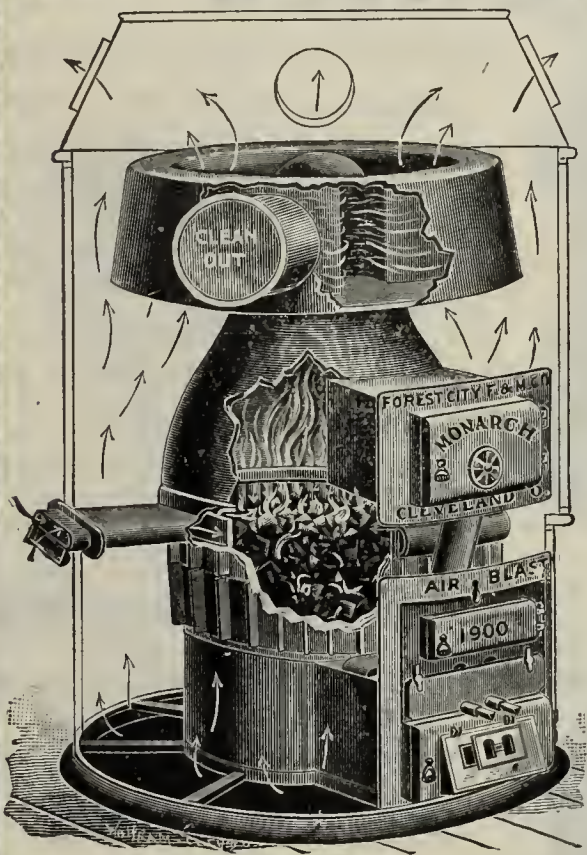
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All Cast Iron.  
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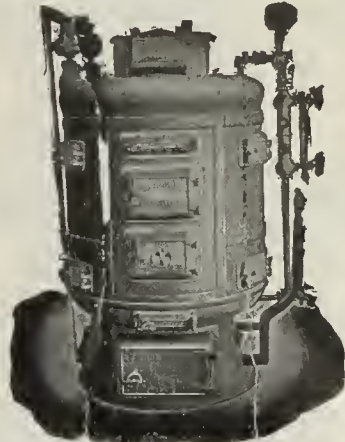
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Pierce Improved Florida Steam Boiler.  
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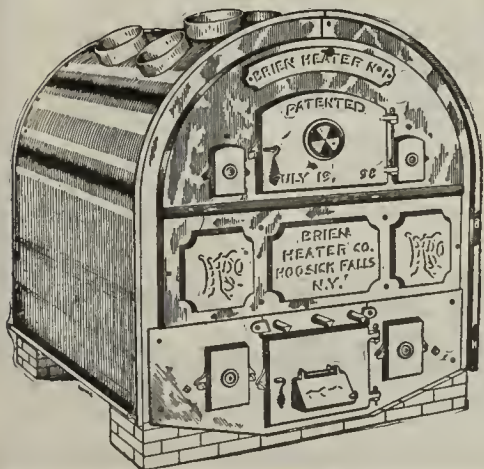
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low down as the "BRIEN."

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HOOSICK FALLS, N. Y.



# Portable OVENS

FOR  
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JAPANNING,  
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OVENS FOR Bakers, Confectioners, Hotels, Etc.

Made in all sizes, single and double, for coal, wood,  
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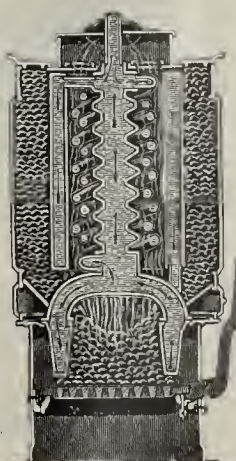
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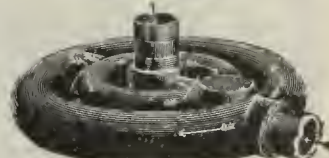
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Base section when  
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Will heat those cold rooms or an addition to the build-  
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# "A B C" Fan Systems

insure the equal distribution of heat guar-  
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A Practical and Comprehensive Treatise on Warming Buildings with Hot Air, by William G. Snow, with an Appendix on Furnace Fittings. 170 pages; size, 6 x 9 inches. Cloth bound. Price, \$1.50.

This is the only book that has been brought out which presents a systematic and reliable treatment of the warm air furnace system of heating.

It deals with the various types of furnaces, their construction, proper location and setting, together with furnace fittings, and all matters pertaining to the installation of furnaces and to effective and economical heating by warm air. The subject is discussed for the first time by a competent author possessed of a scientific education and a practical training, who presents positive rules, based on a long experience, for guidance in designing furnace systems for dwellings and other buildings where this popular method is employed. The various details of furnace work are described simply and at such length that the volume will be valuable to all who are in any way interested in the subject. It is recommended to practical furnacemen, to architects, builders and house owners, and to tinnerns and plumbers in suburban sections who do furnace work. To all these it will prove a reliable text-book and guide.

## PARTIAL SUMMARY OF CONTENTS BY CHAPTERS.

**Chapter I.—Furnaces**—Is devoted to Furnace Construction—The Relative Proportion of Furnace Parts—Secondary Heating Surface—Economy and Efficiency—Heating Capacity and Exposed Wall Surface—Manufacturers' Ratings of Their Own Productions, etc.

**Chapter II.—House Heating**—Compares Furnaces and other apparatus, and describes Method of Setting Brick and Portable Furnaces—Location and Area of Cold Air Supply—Cold Air Rooms and Air Filters—Return Ducts and Air Circulation—Size of Hot Air Pipes—Location of Registers, etc.

**Chapter III.—The Combination System**—Discusses Heating Distant Rooms with Radiators—Balancing the System—Location of Water Heater in Furnace—Capacity of Water Heaters—Size of Radiators, etc.

**Chapter IV.—Air**—Deals with the Necessity of Ventilation—Water Needed to Moisturize Air—Expansion of Air—Velocity of Air in Tubes, etc.

**Chapter V.—Heating and Ventilation of Buildings**—Considers the Size of Furnaces Required—Fresh Air Room and Supply—Air Circulation—Size of Flues—Use of Stack Heaters—Size of Heating Coils in Vent Flues, etc.

**Chapter VI.—Heating of Public Buildings Churches and Stores**—Is given to the Size of Furnaces Required—Grate Surface in Ventilated Buildings—Air Supply—Size of Heating and Ventilating Flues—Size of Stack Heater, etc.

**Chapter VII.—Fan-Furnace Combination System**—Is devoted to Positive Warm Currents from Fan Systems—Location of Fan and Driving Apparatus—How Good Furnaces are Aided by Fans—Types and Efficiency of Fans—Area of Ducts and Flues, etc.

**Chapter VIII.—Temperature Control.**

**Chapter IX.—Estimate and Contract Blanks.**

**Chapter X.—Value of Fuels. The Proper Size for Furnace Chimneys—with tables.**

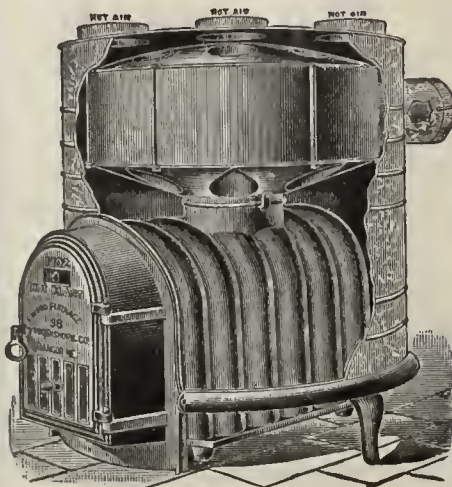
## APPENDIX.

**Furnace Fittings.**—A section of 45 pages dealing with the Making of Furnace Casings—Metal Cold Air Boxes—Making Furnace Bonnets and Collars—Making Pipe and Elbows—Register Boxes and Stack Shoes, etc.

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a practically indestructible casting, heavily corrugated to stand the strain.

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all directly exposed to the heat of the fire, giving great heating capacity even when fire is low.

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where wood is burned practically—not theoretically.

Our IMPROVED MONITOR,

2 sizes, PORTABLE OR BRICK SET

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Essentials---Simplicity,  
Durability, Economy,  
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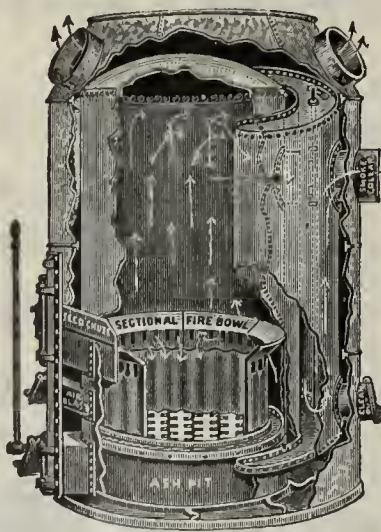
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is a trade winner because it has points of merit peculiar to itself that can be found in no other steel furnace. Our new catalogue is now ready to mail and a description of our Hot Air and Hot Water Combination Furnace can be seen in it. We furnish either the cast iron lining or the fire brick at the same price. Our Wood Furnace is called a powerful heater by those who use it.

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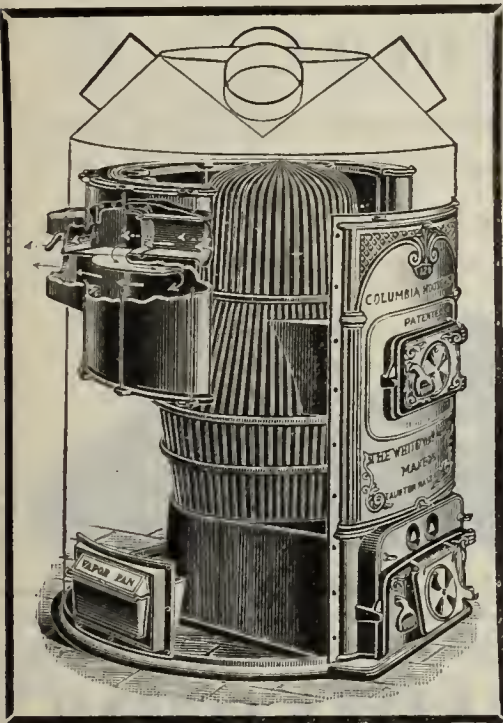
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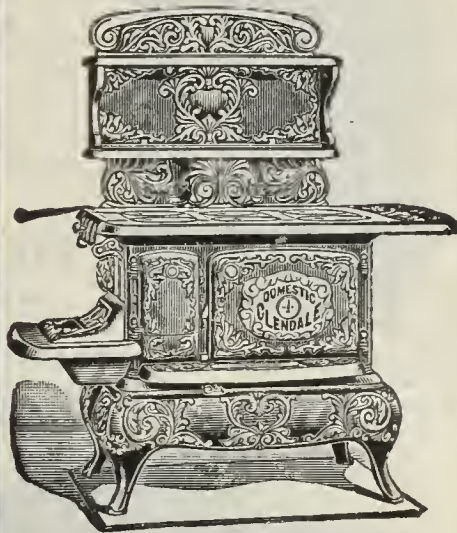
Just show the Columbia Household to any one who wants a really good furnace at a low price—tell them the cost and you'll make a sale on the spot.

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“Oh, yes, provided you sit in the shade of a tall tree while you do it.”—*Philadelphia Press.*





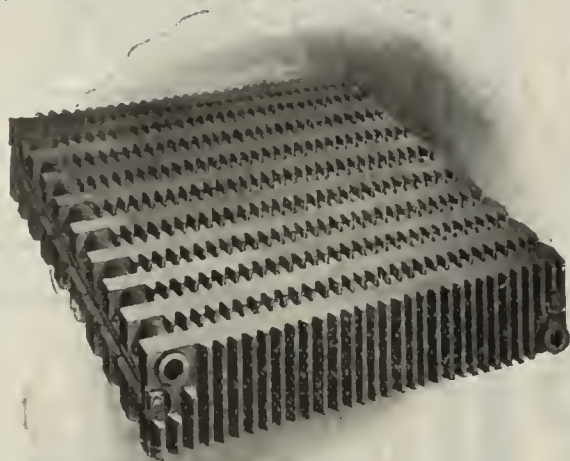
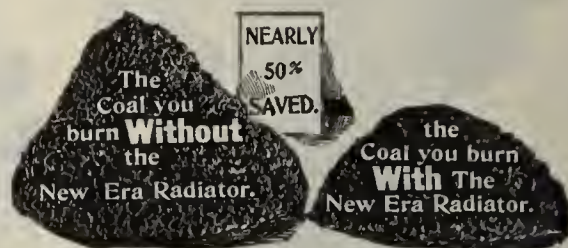
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**New Era Radiators** will do it. We now make a special Radiator for Soft coal. October is a great month to sell them. Send for our inducements to handle them at once.

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4866 sq. ins.

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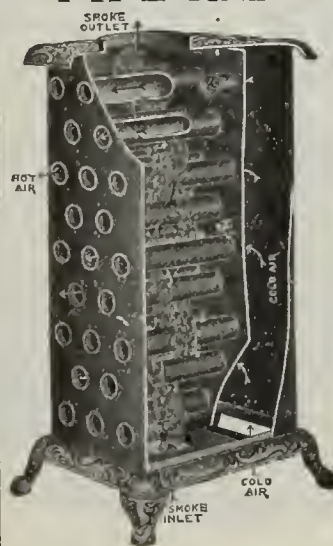
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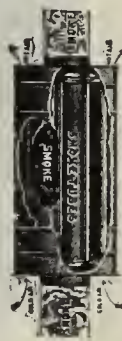
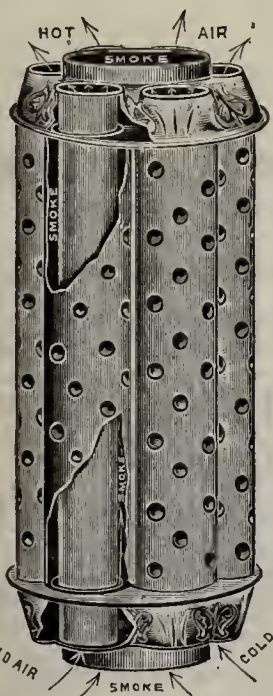
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for Coal, Wood, Gas and Oil Fuel.

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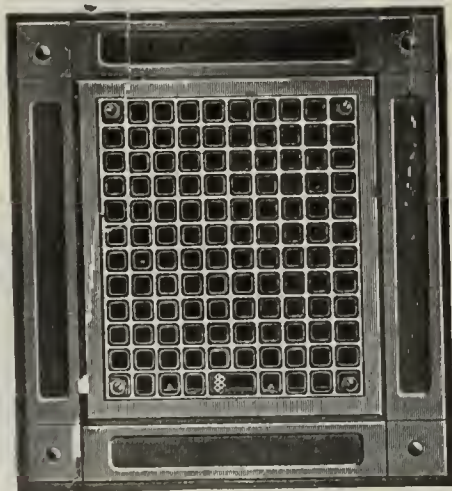
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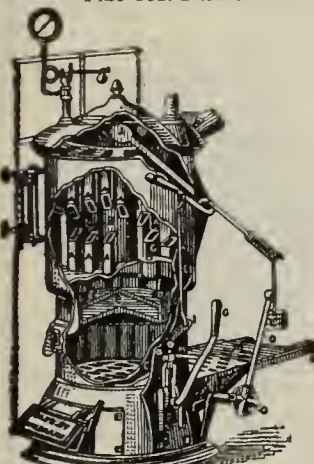
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### The Contents are as follows

|                                                                                                                                                                                                                                                             | Page.  |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|
| POINTS ON CHIMNEYS                                                                                                                                                                                                                                          | 7-32   |
| An illustrated article by J. L. Bixby, Jr., describing many details in chimneys, which cause trouble, and giving remedies. An important table is presented, of the sizes of chimneys required in dwelling houses, based upon the amount of work to be done. |        |
| DEFECTIVE FLUES                                                                                                                                                                                                                                             | 33-35  |
| This article presents information resulting from a wide, practical experience of the writer, and gives sound advice on some of the details of chimney construction.                                                                                         |        |
| HOW TO IMPROVE A WEAK CHIMNEY                                                                                                                                                                                                                               | 36-40  |
| VARIOUS FORMS OF VENTILATORS or CHIMNEY TOPS                                                                                                                                                                                                                | 41-45  |
| CONDENSATION IN STOVE PIPES                                                                                                                                                                                                                                 | 46, 47 |
| SMOKE PIPE FOR WOOD FURNACES                                                                                                                                                                                                                                | 48     |
| REMEDYING DOWN DRAFT IN CHIMNEY                                                                                                                                                                                                                             | 49-51  |
| CONNECTED FLUES DESTROY DRAFT                                                                                                                                                                                                                               | 52-55  |
| FAILS TO BAKE ON BOTTOM                                                                                                                                                                                                                                     | 56-62  |

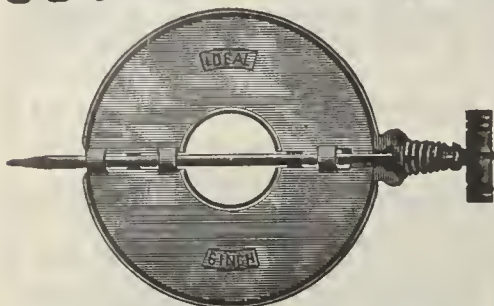
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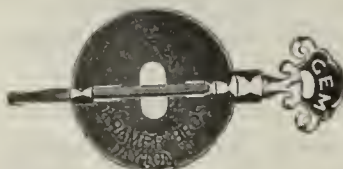


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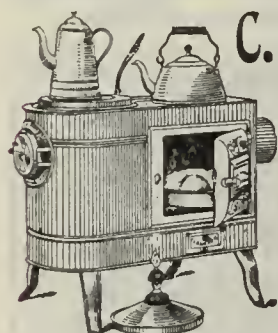
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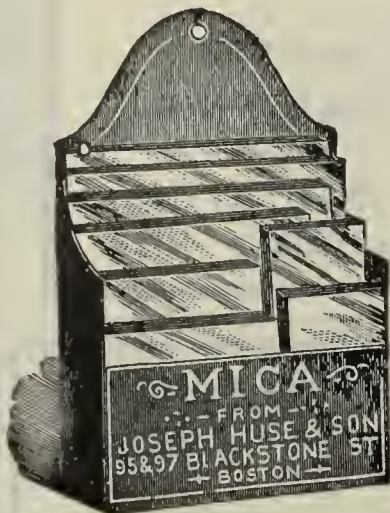
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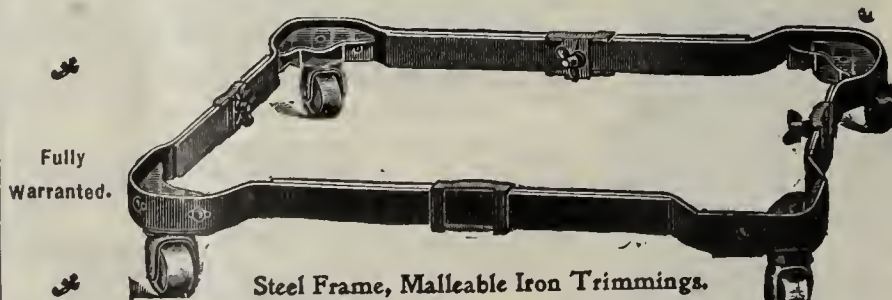
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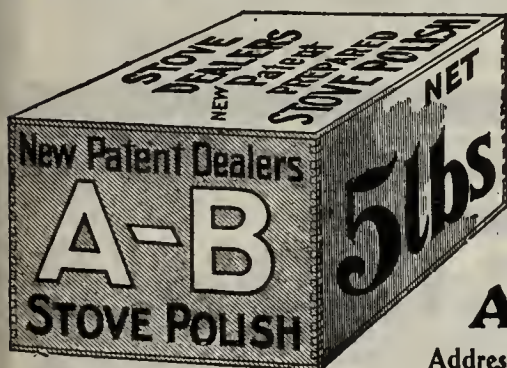
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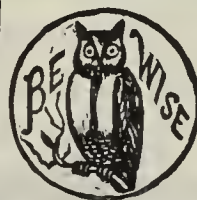
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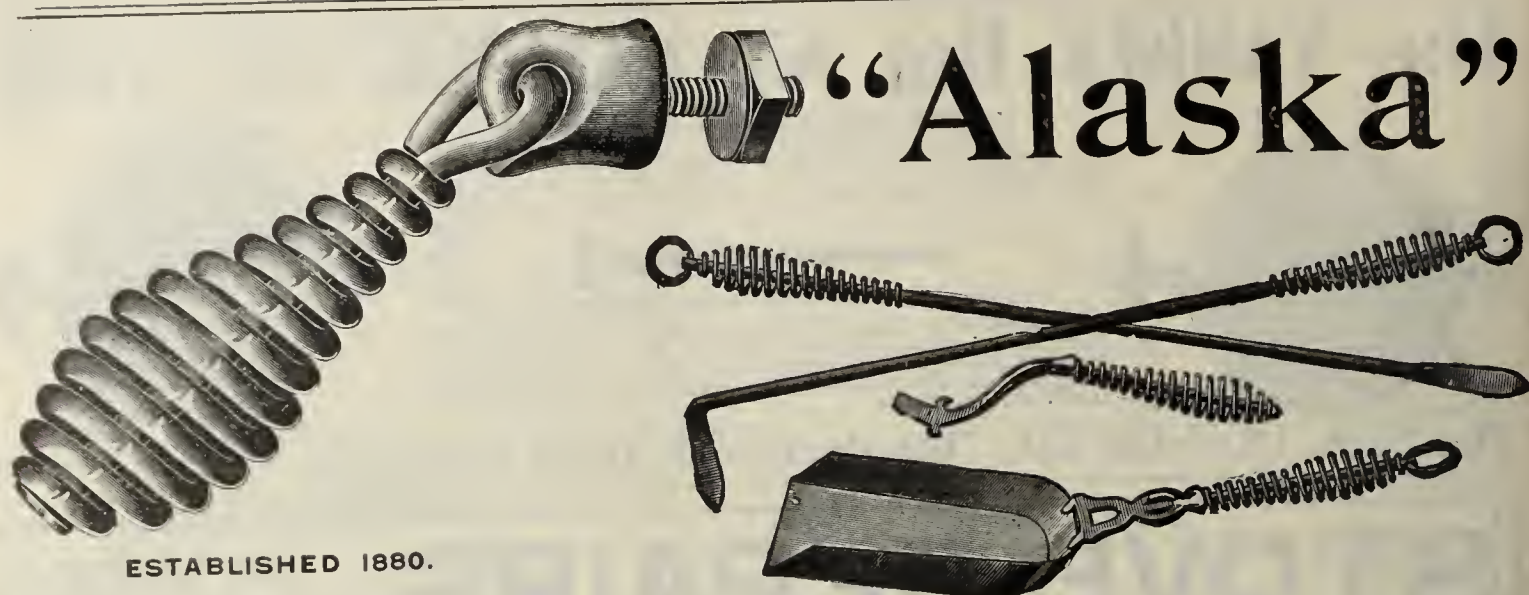
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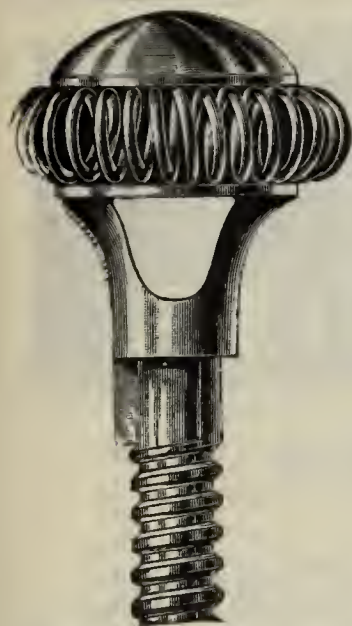
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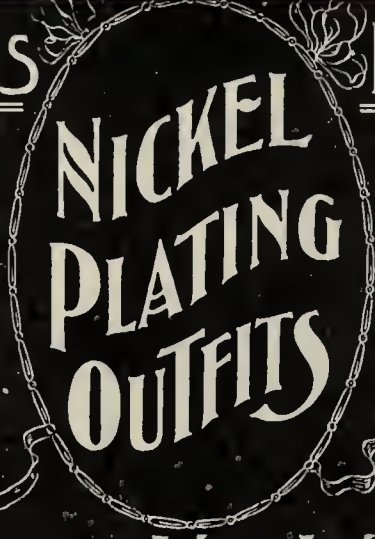
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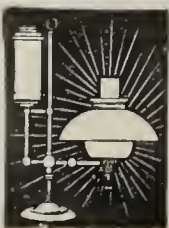
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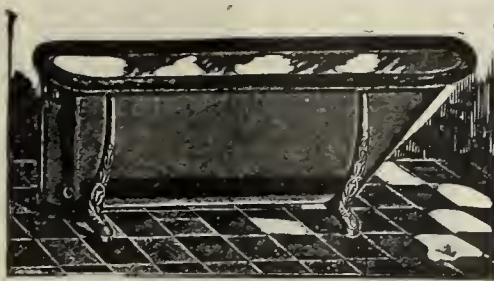
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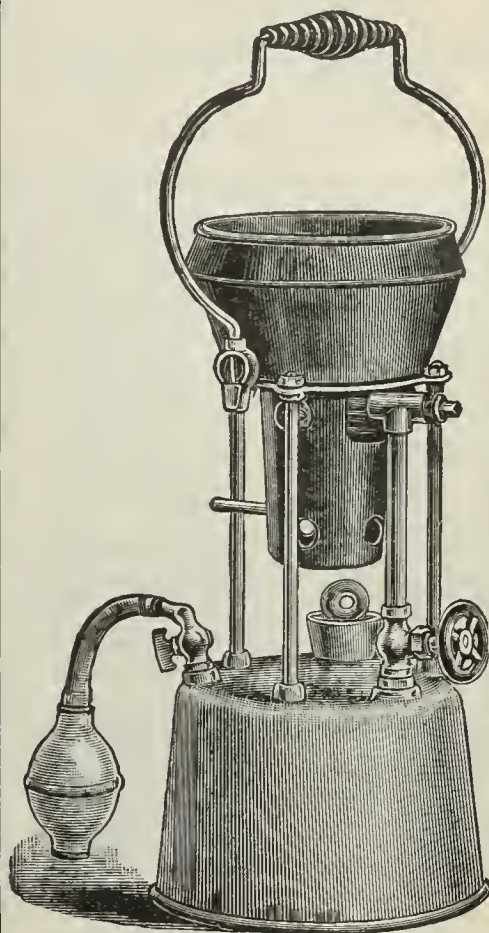
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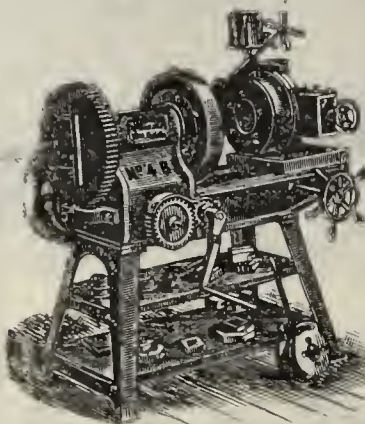
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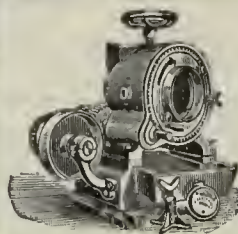
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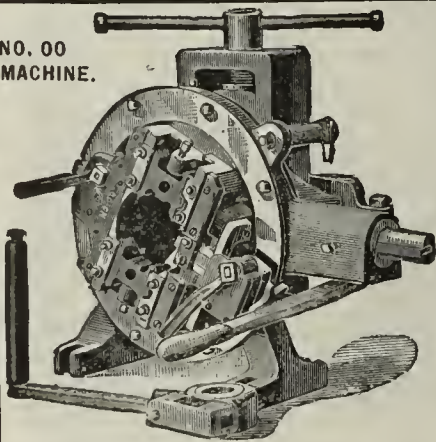
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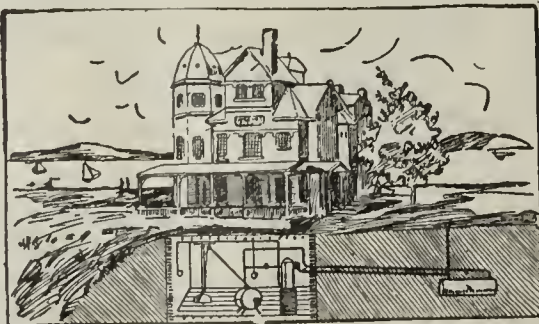
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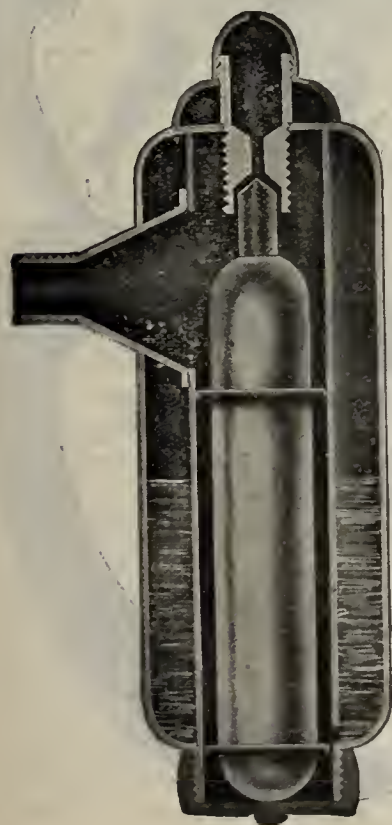
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NEW YORK AND CHICAGO.

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Volume LVIII.....No. 13  
Index to Reading Matter.....Page 72

## The Anthracite Strike.

The anthracite coal strike is now in its fifth month with no assurance of an early settlement and the situation is in many ways a serious one. The miners appear to be conducting their struggle with a grim determination to fight it out to the last. The stand of the operators, on the other hand, is equally unyielding. All efforts, from whatever source, to bring about a settlement by means of arbitration, conciliation or conferences have so far failed of accomplishing any tangible results. Meanwhile stocks of anthracite coal in the East are dwindling in many places to very small proportions, and the specter of a probable coal famine confronts the consumer just as the cold season is setting in. In New York the price of anthracite coal is now absolutely nominal, the dealers having agreed to make their own prices to suit their individual conditions. A few cargoes of Welsh anthracite have arrived and others are on their way to Atlantic ports. It is likely that a good many more shipments will follow if the strike is not speedily brought to a close. While the reports from the anthracite districts indicate that there is a steady increase in the output of the mines that are being worked by nonunion labor, the aggregate amount put on the market is not nearly enough to cover the requirements of consumers in the hard coal using districts. One development in connection with the coal strike, which is becoming very evident, is a growing loss of sympathy for the striking miners in labor circles generally. While many of the labor leaders and representatives of unions speak and appear to be in favor of the miners' strike, it is said that a strong feeling of disapprobation exists in the labor ranks, which is growing steadily as the effect of the strike is becoming felt by the workingmen and their families. While union workmen generally are naturally in full sympathy with the aims of the miners in their efforts to better their condition, they regard the present time as unfavorable for the success of a strike, and many express a strong desire to see the struggle terminated on any terms that may be feasible, so that a fuel famine in the East this winter may be averted. The direct losses to the mine owners and the miners have been enormous and the losses caused to the consuming public have been at least equally great. An early settlement of the present deplorable struggle is desirable, and even essential, in the interests of all concerned.

## Handsome Returns from Agriculture.

That the prosperity of this country is due to the great purchasing power of the people needs no elaborate argument. It is a self evident proposition. Whether the laborer, the skilled mechanic or the farmer be considered, it is found that his remuneration is much above the rate prevailing in other countries. He earns more and therefore has more to spend for necessities, luxuries and pleasures. But while all classes of workers contribute to the wealth of the country they depend primarily on the results of the labor of those who develop its natural resources in the shape of the products of the farm, forest and mine. First in importance among these are the farmers. The crop season is now drawing to a close and we are able to form a fairly accurate opinion as to the yield of the great staples. The results of this year's work of our agriculturists are satisfactory, as practically all crops are equal to or above the average of the past ten years. Thus the basis of continuing prosperity has been well established, and those who depend most directly on the trade of farmers are particularly gratified at the outlook.

In this connection an instructive statistical demonstration comes from North Dakota. According to crop experts the value of farm products in that State this year will be upward of \$100,000,000. The number of families in the commonwealth is placed at 75,000. This year's crops therefore represent an average of \$1400 for each household in the entire State. It is asserted that such a showing has never before been made for any considerable aggregation of people. While North Dakota is essentially an agricultural State, it includes quite a number of thriving cities and towns whose inhabitants are engaged in other occupations than agriculture. To show such an average for every family in the State from farm products alone is undoubtedly a remarkable achievement. Its significance, however, lies in the fact that the purchasing power of the citizens of that State is fixed at a high rate for the coming year. They will have an abundance of money to gratify their tastes and to improve their surroundings. As North Dakota is a typical agricultural State it may be accepted as a fact that a similarly satisfactory showing could be made for the others. North Dakota is not an exception. Farming communities everywhere are enjoying good times, and farmers will continue to be heavy consumers of all kinds of manufactured commodities. The partial failure of the corn crop last year had happily no effect in checking enterprise or lessening confidence. With good crops this year and the good prices for farm products now prevailing one great cause of anxiety has been removed. The basis for another year's very good business has been established, and if the fair prospect is blighted it will be due to some cause not connected with agriculture.

## Trouble with Street Heating Systems.

At this season those who have franchises for the use of street mains for heating buildings test their



piping to determine its condition for the winter work. About the only things the public in general appreciate in connection with such heating plants are the freedom from dust and ashes, secured by an apparatus in the cellar, the avoiding of labor in attending to it, and the fact of having a supply of heat always at their command without effort. Little or nothing is known, however, of the troubles which arise from the piping systems which are buried under the street and are not in use during the summer season. That is the time when rust eats into the piping, particularly at the threaded joints, and also makes the valves stick, so that in many cases, rather than that the valves should be broken the mains are entirely opened or closed, as the case may be. The heating companies also have to contend with the accumulation of rust in the pipes, which is possibly carried to some point and deposited so as to obstruct the distribution of steam. Not infrequently these causes produce leaks which not only waste the steam to the company's disadvantage, but this steam has the effect of wetting the ground around the pipes and damaging the roadway above. Such leaks, however, ultimately come to the attention of the customers of the heating company through failure to secure a satisfactory quantity of steam in especially cold weather, when the demand for more heat naturally arises and is apt to exceed the productive capacity of the heating plant. Sometimes on investigation it is found inexpedient to make the needed repairs, and sections of the piping are shut off, so that the customers of the company are compelled to provide some other means of heating their buildings. Newspaper reports from various localities indicate that the work of extending the mains of heating companies is in many instances behindhand, while in other cases the repairs needed to make the mains already in use available for supplying customers are not likely to be completed before the demands of the customers become urgent. This winter another trouble that will confront both the heating companies and their customers is the increased cost of service. Already the Reading Steam Heating Company of Reading, Pa., who have two miles of heating mains, heating nearly 300 buildings, have notified their customers that the rates for heating will be advanced 20 per cent., and that the company will use soft coal, which, in all probability, will distribute its dirt and soot indiscriminately among those who patronize the company and those who do not.

### Editorial Notes.

It is worthy of more than passing notice that the amount of gold in the United States Treasury at the present time exceeds that of any previous time in the history of the country, and with one exception it is larger than that held by any country at any time in the history of the world. On September 6 the United States Treasury contained \$573,936,194, an increase of over \$79,000,000 since July 1, 1901. The stock of gold in the Treasury is now being added to at the rate of \$200,000 to \$300,000 a day, with the prospect that the movement will continue for some time to come. The Treasury officials look upon the accumulation of gold as evidence of prosperity and confidence in the stability of the country. Gold and silver certificates and United States notes are being issued in place of the gold coin and bullion.

Further evidence of the financial prosperity of the country in the past few years is given in the increase in the bank deposits of the country shown by the figures just published by the Treasury Bureau of Statistics.

These statistics show that the people of the United States have an aggregate of more than \$8,500,000,000 deposited in banks—an average of \$108 per capita. Ten years ago the bank deposits aggregated \$4,232,000,000, or almost exactly half the amount held by the banks to-day. Twenty years ago they were only \$2,600,000,000, or a little more than one-quarter of the present deposits. These figures are compiled from reports of the Comptroller of the Currency, and include the deposits in the national banks and savings banks, State banks, loan and trust companies and private banks, and cover the official figures of the year 1901. During recent years the growth in bank deposits has been very rapid. From 1878 to 1882 the increase was \$877,500,000; from 1882 to 1887, \$500,000,000; from 1887 to 1892, \$1,375,000,000; from 1892 to 1897, \$566,350,000, and from 1897 to 1902, \$3,338,200,000.

### An Iceless Refrigerator.

In these days of horseless vehicles and wireless telegraphy, it is not surprising to learn that an iceless refrigerator has been invented by an Oregon man, who uses the principle of the evaporation of water to reduce temperature. According to the inventor, quoted in the *New York Evening Post*, the iceless refrigerator presents much the same appearance as do ordinary refrigerators. The outer casing and door may be made of plain or expensive woods, as taste may dictate. The upper half and the top are closed tightly. The lower portion is formed of inclined slats, through which air may be freely admitted. The door is also made tight at the top and provided with slats at the bottom. The interior frame is made entirely of galvanized iron, to prevent shrinking and expanding or becoming moldy with constant dampness, and it is also a good conductor of heat, and therefore assists in reducing the temperature lower than it could otherwise be maintained. Burlap or other fibrous material is fastened upon this inside frame so as to form an interior wall, which stands at a sufficient distance from the outer wall of the structure to form an annular space between the two.

In the top of the inner structure is an opening covered with screen material. Through this and the slats around the bottom of the outer casing a constant draft of air passes, thus causing an evaporation of moisture, with which the fibrous material is saturated, so that the interior of the apparatus is maintained at a low temperature. All around the top of this frame is a strip of galvanized iron, with an inclined lip bent over. The edge of the burlap is fastened upon the face of the frame,  $\frac{1}{8}$  inch above the edge of the lip, so that the water which is discharged upon this inclined surface will not flow over the burlap, but will be directed against it, so as to be absorbed, thus saturating the burlap. The fastening for this burlap or other fibrous material consists of a double pointed tack or holder, the head of which is soldered or otherwise secured to the face of the galvanized iron. The fibrous material being pressed over the points they are folded down to hold it in place. This renders it easily removable for change or cleaning.

Above the top of the frame is a tank for holding water. Projecting from the sides and ends of this tank, and at a suitable distance apart, are horizontal pipes having in the outer ends vertically disposed needle valves, which control the flow of water from openings in the lower parts of the pipes. These openings and controlling valves are situated in line above the slanting lips so that water delivered from the openings falls upon the lip and flows down into the fibrous material, keeping it constantly saturated.

At the St. Louis World's Fair great fluted pillars 36 feet high and  $4\frac{1}{2}$  feet in diameter are now being made in a mold set in place, the liquid plaster being poured in at the top. Ordinarily such pillars are made in 24 pieces and set in place, leaving many joints that have to be carefully pointed. There will be 112 such columns on the Textiles Building.



## THE LATE HENRY A. RICHARDSON.

The passing away of Henry A. Richardson removes from the scene of his earthly labors and successes a man who took a very prominent part in the development of the furnace trade of this country. He became connected with the trade in its infancy and was recognized as one of its leaders throughout his entire business career. His genial disposition assisted greatly in securing his own prominence and that of his firm, while the recollection of his unfailing kindness keeps his memory green with all those who were favored with his friendship. He died on Monday, September 16, at his home in Poughkeepsie, N. Y., after a short illness.

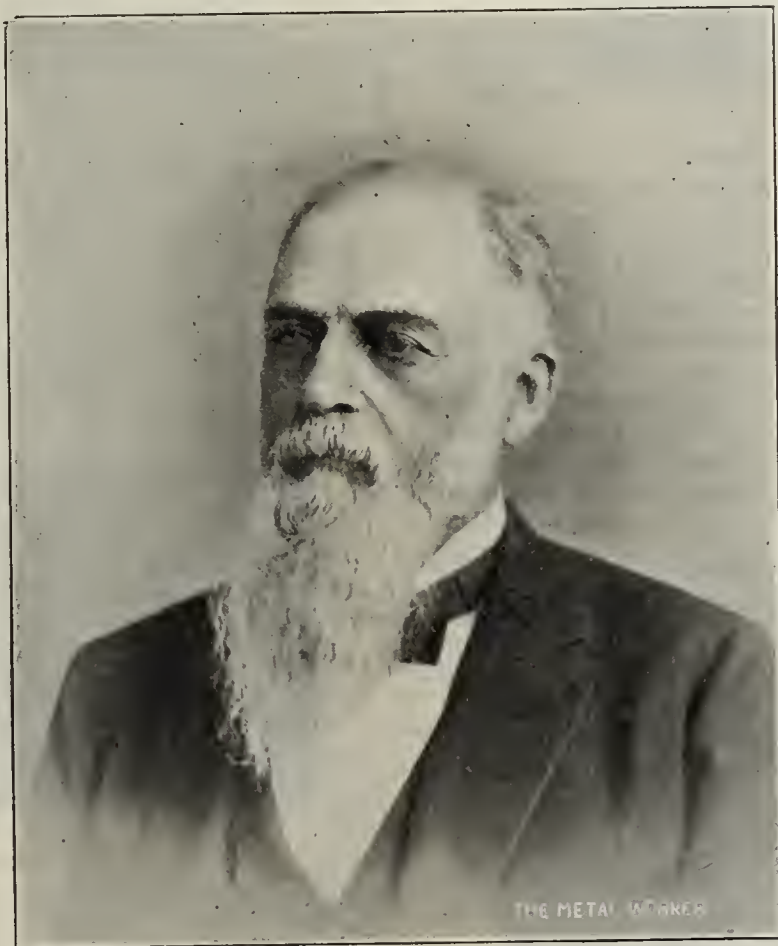
Mr. Richardson was born at Leominster, Mass., May 15, 1819, regularly served an apprenticeship at the tin-smithing trade at Montpelier, Vt., and in 1837 embarked in business for himself at West Boylston, Mass. At that time the hot air furnace industry was in its infancy. Later he carried on a business at Worcester, Mass., selling the Chilson hot air furnaces for several years, and subsequently forming a copartnership with an associate under the firm name of Richardson & Loring. While engaged in business in that city he had much experience with the shortcomings of the wood stove of that day, and saw the demand for a wood cook, properly constructed, to remedy these defects. After making a set of drawings embodying his ideas he arranged with Amos Barstow of Providence, R. I., for the manufacture of the stove, which was put on the market and became famous as the Bay State Cook. This was one of the foundations of the success and fortune of Amos Barstow.

In 1847 Mr. Richardson sold out his Worcester business

and entered into partnership with Gardiner Chilson of Boston, Mass., forming the firm of Chilson, Richardson & Co., the unnamed member being the late N. A. Boynton. In 1851 the firm established themselves at 347 Broadway, New York. In 1853 they dropped their Boston connection, and the firm of Richardson & Boynton was established. The desirability of possessing a foundry and manufacturing their own goods led to the formation, in 1854, of the firm of Cox, Richardson & Boynton, Mr. Cox of this firm afterward becoming a member of the firm of Cox, Church & Co. of Troy, N. Y. As a result of the new connection the foundry at Spuyten Duyvil, N. Y., now occupied by the Johnson steel plant, was secured, and the house made a variety of stoves as well as hot air furnaces. They enjoyed a large stove trade both at home and abroad, trading largely in South America and Australia; but the Australian trade had been originally in possession of Scottish foundry men, who filed up the stoves of Cox, Richardson & Boynton after they became popular and used them for patterns, with the firm name on, and by selling them at a lower figure regained their supremacy in this field. The business had now grown to

considerable proportions, but when the panic of 1857 overwhelmed the country the firm, though having assets seven times greater than their liabilities, were forced to the wall through inability to make collections. About two years later Richardson & Boynton again entered the field, and after a struggle of 12 years settled all claims against the old house in full, with interest. They continued in business at 260 Canal street until about 1865, when they moved to 234 Water street, New York, where the business has since been continued, but greatly extending in later years, so that 232 to 236 Water street have been added. During this time the house assumed a leading position in the manufacture of hot air furnaces. Though Mr. Richardson retired 20 years ago, the high standing of the business he founded has been maintained by his four sons, three of whom survive him. Under the ownership and management of A. S., H. T., and Dwight S. Richardson the progressive spirit of the house has lived, newer goods

to meet the demand of the day have been produced and the popularity of the establishment continues.



HENRY A. RICHARDSON.

THE PECK-WILLIAMSON COMPANY, Cincinnati, Ohio, are of the opinion that "the nearest way to a customer's heart is through his coal bin," as the average man is apt to worry about his winter coal bill all through the year. They opine, therefore, that every man who is Furnace hunting has two objects in view: one to buy the Furnace that consumes the least coal, the other to buy the Furnace that gives the most comfort in his rooms. Every dealer is likely to assure him that this or that Furnace will meet these demands, and the customer realizes that he must take somebody's word for it. He cannot satisfy himself by looking at a Furnace,

but must purchase it and then abide by the consequences. The company point out, however, that their Underfeed Furnace is of a different nature, as it shows in itself just what it is. They claim that it burns less coal and gives greater heat—therefore more heat—at one-half or one-third the coal cost. In this Furnace the coal is fed from underneath and the fire eats down into it, consuming the heat generating properties of the coal as fast as they are liberated. A booklet which the company have issued presents a great deal of information relative to the Furnace in question.

THE main building of the Rossmore Stove Works, Peekskill, N. Y., was recently damaged by fire to the extent of several thousands of dollars. The fire started in the third story of the building and had evidently been smoldering for some time before it was discovered. The principal loss resulted from damage to the patterns, but we understand that the loss to property and equipment was fully covered by insurance. As a result of the fire operations in the foundry had to cease for a time, but in the course of a few days everything was in running order in that department.



## The Evolution of a Red Cross Range.

The equipment of a modern foundry for the production of that household necessity, the kitchen range, is a subject of interest to every one connected with the production and sale of these goods. Many who have sold cast iron cooking stoves for years have little idea as to how a new stove is designed and finally produced. It is a common saying among stove manufacturers that it is cheaper to make stoves on paper than it is to make them of wood; and yet, before the castings can be produced they have to be made of wood. Many of our friends among the stove manufacturers may feel that we could leave it unsaid that some stoves are produced by procuring a sample of some popular favorite and using it as a copy to make another as near like it as can be, except in outward appearance, so as to avoid the charge of absolute piracy. The description of how stoves are made which we give below is confined, however, to the methods of those who have ideas and who perfect them in detail before presenting them in stoves. The course pursued by such a house will be understood from the following account of the production of the Red Cross line by the Co-operative Foundry Company of Rochester, N. Y.:

### THE FIRST STEPS.

When the stove manufacturer finds it necessary to supplant some of his old favorites with new constructions more suited to the time, the course pursued by the leading stove makers seldom varies. After the idea that a new stove is a necessity has crystallized a visit is paid to the drafting room, indicated in Fig. 1, for a chat with the head pattern maker, who may be working while he listens or converses. After a preliminary discussion as to the size of the oven and the fire chamber, the size of the top, if it is to be a Red Cross range, and other dimensions are decided upon. Then the question of flask, the amount of sand to be handled and other details receive due consideration and dimensions and tracings are modified with a view to striking a happy medium in economy and presenting the most pleasing appearance. After the sizes of the various parts have been



*The Evolution of a Red Cross Range.—Fig. 1.—The Drafting Room.*

determined, they are drawn to a scale and the general design for ornamentation receives due consideration. Thus after the mechanical engineer has solved the practical problems the artist has his sway. Not infrequently, however, it is necessary for the ideas of both to be modified before the final construction is decided upon.

### PATTERNS.

The principal points being settled, the latest Red Cross range drawings are completed, every part having a drawing to a scale. Then the wood pattern maker takes up his part of the work, which begins with a study of the drawings, after which the work is taken in hand, as shown in Fig. 2. Notwithstanding that the drawings given to the wood pattern maker have anticipated as far as possible every little detail that will aid the molder in making a good casting and assist the mounter in putting the range together promptly while contributing the strength that will make a good stove,

the pattern maker is often confronted with practical difficulties which he must overcome. The stove dealer is also considered by making the parts so that when repairs are needed they can be readily put in place. The wood pattern maker is frequently called upon to display his ingenuity in contributing to the construction, for the



*Fig. 2.—The Wood Pattern Shop.*

scheme may have need of further perfection in the pattern itself. Soft, strong, straight grained white pine is the wood that is most generally used in the construction of stove patterns, and every part is made of wood exactly the same as it goes to the dealer in cast iron. A wood pattern maker not only has to make his patterns of a suitable thickness but must also consider that a casting made from a pattern will shrink a certain percentage and that as the stoves must be made of iron he must allow for two shrinkages. After the patterns have been completed they are treated to a coat of shellac to prevent the dampness of the sand in the foundry from swelling and warping them. After a set of castings is taken off, which operation has to be done very carefully by a skillful molder, they are taken to the pattern fitting shop, shown in Fig. 3. Here they are dressed with files



*Fig. 3.—The Iron Pattern Shop.*

and chasers and not only made to fit perfectly but are also made perfectly smooth and then waxed so that they will not rust or allow the sand to stick to them.

### IN THE FOUNDRY.

In the construction of the Red Cross ranges great care is taken in both the wood pattern shop and the iron pattern fitting shop to facilitate the work of the molder as well as to contribute to the durability of the range and to the excellent appearance for which the Red Cross ranges are well known. When the patterns are completed they are sent to the foundry and the molders have their opportunity of looking over them, preparatory to making the molds in sand into which the iron is poured to make the castings that go to make the complete Red Cross range. The view presented in Fig. 4 shows one of the molders in the act of putting the iron pattern in the sand, while another is ramming the sand tight in a mold in which there is a pattern. A mold is originally made in a flask, which consists of two parts. The mold for one part of the castings is made in the lower half of the flask, after which the face of the mold is sprinkled with what is called parting sand. The upper part of the flask is then put on and more sand is shoveled in. If, however, the casting is to have a perfectly smooth surface a fine powder, called facing, is sprinkled all over it before the sand is shoveled in. Then the sand is shoveled in and rammed hard, so that when the upper part of the mold is lifted off the pattern can be taken out and the sand will not fall. This is where the molder has an op-



portunity to display a great deal of skill. The variation in thickness of the different parts of the casting will have a tendency to draw the casting out of shape when the red hot iron cools, shrinks and contracts. To avoid this the mold is rammed hard in some places and but a little in others, just enough to keep the sand from falling at any other place. The molder at times, notwithstanding his long experience and skill, may have to work on one pattern for several days before he solves the problem of making strong, true castings successfully. In order to get the iron into the mold holes are left, which are called gates. These holes do not lead into the mold proper, but frequently little gutters are cut from the hole to the mold, through which the iron enters it. A round hole is used for making some sorts of castings,



Fig. 4.—Molders at Work.

and for others a long wedge shape is provided in the mold and the iron enters the mold proper through the hole, which sometimes is as much as 5 or 6 inches long and less than  $\frac{1}{4}$  inch wide.

#### THE MOLDING PROCESS.

Having solved the problem of making the casting successfully and the proper place for arranging the gates, the molder will begin his day's work by digging over the sand, which has been wetted down the night before, for the purpose of securing an even dampness throughout. Then he is ready to take up the work of making the molds. This continues until the afternoon, when, according to his degree of skill and the character of the job, the molder will either be through his work of making molds in time for a little rest before the iron is ready for pouring off, or he may have to hurry toward the end. The view in the foundry presented in Fig. 5



Fig. 5.—View in Foundry.

shows the finished molds ready to receive the molten iron. In Fig. 6 the molders are seen standing around the cupola ready to catch a ladle full of molten iron. Some castings require the iron to be very hot, while others can be poured when the iron is in a less fluid state. Some

castings are better when the ladle is held high above the mold and some pressure put on it when the iron is poured in. In Fig. 7 is shown a molder who has walked some distance down the foundry with his ladle containing sometimes as much as 60 pounds of molten iron. All of the molds are vented in various ways. Not in-



Fig. 6.—Waiting for the Iron.

frequently a small wire is pushed down through the sand in a great number of places to the pattern while it is in the mold for the escape of the gases created by the facing or other materials in the sand being burned by the hot iron. After the molder has poured off and has filled all of his molds with hot iron, he is ready to begin "shaking out" the small castings which have cooled and piling them up in the gangway, also piling his flasks where they will be convenient for the next day's work. Most of the castings are stacked up before he leaves the shop. Some of the larger ones are allowed to cool



Fig. 7.—Pouring Off.

in the molds and are left to be "shaken out" by the watchman during the night.

#### FINISHING THE STOVES.

In the morning all the work made on the previous day is taken to the cleaning room, where the castings are cleaned of all sand, rough spots and fins, and are sent to the mounting shop. The mounting shop, shown in Fig. 8, is generally provided with emery wheels and such other articles as will facilitate putting the stoves together ready for shipment to customers. Before the stoves are taken off the mounting floor an inspector examines them to see that each one is properly fitted and has all the parts belonging to it, such as mica, nickel plate, cover lifter, ash pan and all the other details that go to make the perfect stove. This is done so that the dealer will have no cause for complaining that the stove is short of some of its equipment. Special care is taken by the Co-operative Foundry Company to see that the stoves sent out from their plant are perfectly fitted in every part so that there can be no danger of breaking or cracking when the first fire is made and also that they are provided with all the appurtenances which they re-



quire to make them complete before they are stored in the warehouse.

The company have recently issued an illustrated pamphlet of 16 pages describing how a stove is made and explaining their care in selecting the best grade of molding sand and in making a proper mixture of pig iron, so as to secure for the Red Cross ranges the very best product that years of experience can turn out. This



Fig. 8.—View in the Mounting Shop.

pamphlet also presents different views of the Imperial Red Cross range, in the interest of which the work has been prepared.

### Peninsular Stoves, Ranges and Heaters.

We have received from the Peninsular Stove Company, Detroit, Mich., a copy of their Catalogue No 208, consisting of 128 pages, profusely illustrated with well executed engravings of attractive lines of Peninsular stoves, ranges and heaters, which are offered in extensive variety. The volume measures  $11\frac{1}{2} \times 8$  inches in size and on the front cover is an interior view of a stove foundry, showing the molders pouring the molting metal. In the upper left hand corner is a sunburst with a fac-simile of the company's trade-mark printed in colors. The fourth page of the cover shows a fac-simile of the guarantee bond which the company give with each stove or furnace sold. The entire make up of the volume is rich and attractive, and shows the recent progress and present high standard of stove, range and furnace manufacture as embodied in the goods of the Peninsular Stove Company.

The opening pages are devoted to a statement of terms and discounts, with reference to breakage and freight overcharges. A very interesting description is presented of the manufacture of the Peninsular planished steel range, the essential features of construction being shown by means of independent broken engravings. The leading place is given to the Electro Peninsular steel range, which, boiler like, is hand riveted every 2 inches with steeple headed rivets, driven cold. This stove is designed for using coal or wood and is offered in the usual styles and sizes. The Elegant and Active Peninsular are also members of this general class, embodying features which are characteristic of this line of the company's goods. Under the names Peninsular and Perfect Peninsular the company offer some attractive steel ranges adapted for hotels, restaurants, boarding houses, club houses, public institutions and other places where it is necessary to prepare food for a large number of people. Following these, attention is given to the Peninsular planished steel gas ranges, which are designed for using either artificial or natural gas. These are handsome constructions, offered in many varieties, and running from three burners up to constructions having eight top burners and two simmering burners. Several lines of combination ranges intended for using artificial or natural gas or coal or 24-inch wood are also shown.

The cast goods in the way of cook stoves and ranges occupy 40 pages of the catalogue and constitute a handsome assortment. Nickel has been combined with cast ornamentation in a way to produce striking results, while the constructive features are such as to render the goods satisfactory in operation.

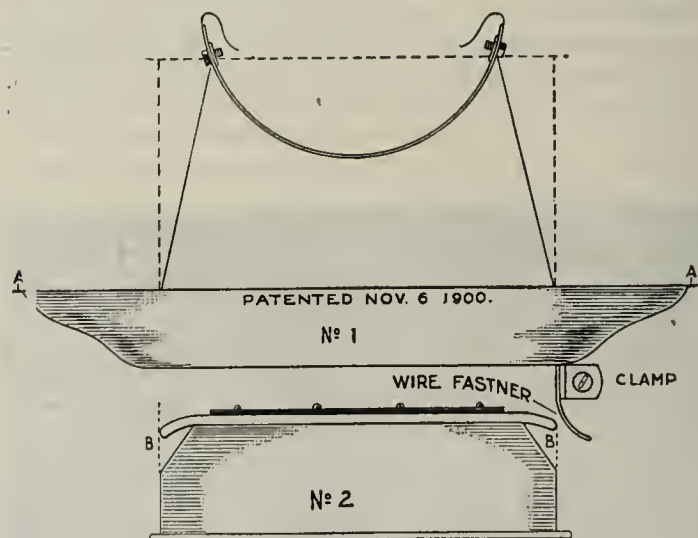
The heating stoves occupy 30 pages following the cook stoves and ranges, attention being first invited to the Noble Peninsular, a handsome low priced base burner, which is said to embody in its construction many practical points of the highest priced base burners. The claim is made that it is the only stove of its class equipped with duplex grate and annular shaking ring. The fire pot is deep, extra heavy and has a convex top. The Empire Peninsular which follows is referred to as thoroughly up to date in all respects. It is of a reflector style of top, which form of construction it is claimed adds greatly to the heating power, while at the same time giving a most brilliant effect when the stove is in operation. It is made as a double heater and one size with and four sizes without oven.

The leading base burner is the Sunburst Peninsular made for using hard coal or coke. It takes its name from the appearance which it presents when in operation, the ample mica illumination permitting the glowing coals to send their streams of radiant light in all directions. The special features of the stove are illustrated by means of separate engravings, which add much to the interest of the matter. Among the goods to which attention is given in the following pages may be mentioned oak stoves, smoke consuming hot blast slack burners, cottage parlor surface burners, globe, cannon, laundry and box stoves.

The closing pages of the catalogue are given up to Peninsular warm air furnaces and hot water and warm air heaters adapted for all fuels. A feature which the stove dealer will appreciate, especially if he does a large repair business, is the outline cuts of steel and cast ranges, coal and wood cooks and of a base burner, which are to be found among the closing pages. The various parts of the stoves are numbered, each number referring to an explanatory table giving the correct name of that part. There are also given some directions for ordering repairs, which if carefully followed by the dealer will tend to prevent many of the annoying mistakes which are constantly occurring in this branch of the business.

### The Williams Adjustable Stove Pipe Fastener.

The Lawrence Stamping Works, North Lawrence, N. Y., are manufacturing the Williams patent adjustable stove pipe fastener, of which an illustration is given herewith. This fastener is described as simple and effective, and of such mechanical construction that it can be easily adjusted to the chimney flue and the pipe to



The Williams Adjustable Stove Pipe Fastener.

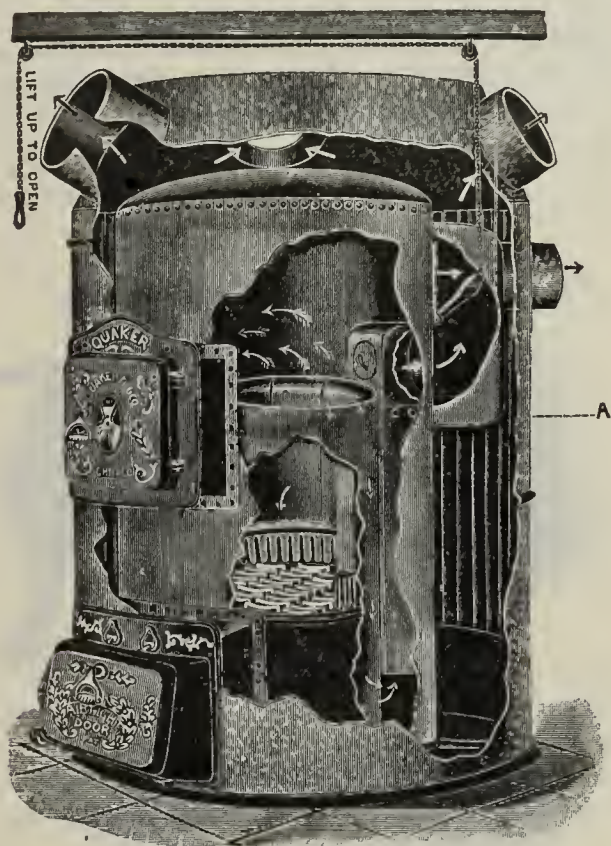
be connected with the fastener. The fastener is drawn firmly to the chimney breast by straightening the adjustable bar which forms a double hook when the fastener is in place. It has a strong pipe clamp fitted with malleable iron ears which extend outside the pipe ring, forming a positive grip on a stove or elbow. It also clamps the asbestos flue stop, indicated at No. 2 in the illustration, to the chimney by the simple method of tightening a stove bolt. Another feature of the Williams fastener to which the manufacturers call attention



is the wiring attachment, which provides a positive anchor for adjoining sections, preventing them from becoming disconnected and protecting the wall or ceiling from the use of destructive hooks or nails for wiring purposes. The pipe ring is of the ordinary type and finish. The fastener is made of aluminum coated steel in three sizes—5, 6 and 7 inches in diameter respectively, and is sold by the company on a guarantee.

### The 400 Series Quaker Furnace.

The Quaker Mfg. Company, Chicago Heights, Ill., are now enjoying the full facilities of the model plant which was erected to take the place of the establishment that was burned some time since, when the com-



The 400 Series Quaker Furnace.—Fig. 1.—Broken View.

pany were operating under the name of the Wireton Heating Company. The foundry, assembling room, sheet metal department, warehouse, shipping department and office facilities have all been arranged with a view to handling the hot air furnace business promptly, so as to satisfy customers and to turn out a product

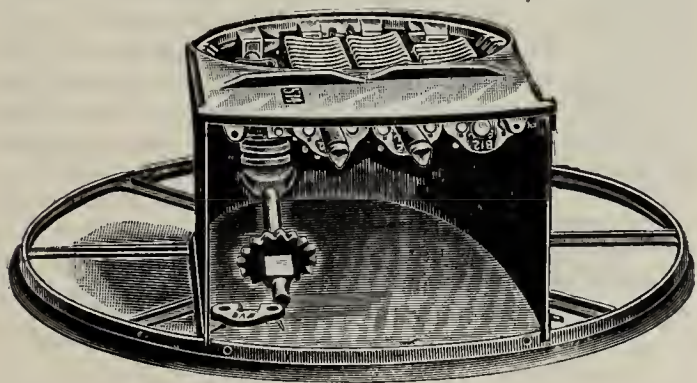


Fig. 2.—The Grate and Ash Pit.

that will increase the popularity of the Quaker goods as they become more widely used. The company have spent \$20,000 recently in new furnace patterns, and the new 400 Series Quaker furnace, a broken view of which is shown in Fig. 1, is one of their newest productions.

This furnace is constructed with a heavy steel shell  $\frac{1}{8}$  inch thick, which encircles the fire box, combustion chamber and ash pit. This has a dome made of 3-16 inch steel, flanged and riveted in, making it perfectly air and water tight. The fire box is lined either with fire bricks or with heavy sectional cast iron lining. The

combustion chamber is large, which facilitates the perfect consumption of the gases, which then escape from the fire box to the outer chamber. After heating the dome and upper portion, they dive to the bottom and find their way to the smoke outlet through the vertical steel box at the rear. When the cold air enters the furnace it strikes a surface continually increasing in temperature as it passes upward, resulting in a strong heating capacity and a lively flow of hot air. These furnaces are equipped with a grate and ash pit, as shown in Fig. 2, which has triangular bars of the labor saving type, and so connected that any bar can be readily removed or replaced for repairs. The construction of the ash pit and ash door is such that in case of necessity the furnace can be placed 6 inches lower than the level of the basement floor, increasing the elevation that can be given to the hot air pipes in low cellars.

The company also make a special wall register and their time regulator for controlling the draft of furnaces has established a wide popularity. They are prepared to furnish combination water heaters for use in connection with their furnaces, and have a full line of fittings and supplies.

### Columbian Stoves, Ranges and Furnaces.

The Keeley Stove Company, with main office and foundry at Columbia, Pa., have just issued from the press a 186-page catalogue of the Columbian stoves, ranges, furnaces and hot water specialties, which they manufacture in many varieties. A conspicuous feature of the catalogue is a page group of portraits of the officers and other representatives of the company. The opening pages are devoted to some remarks on the subject of setting up a stove; directions for ordering repairs and price-lists of fire brick and stove linings which the company are in a position to furnish. The leading place in the catalogue is given to the Columbian Peerless range with horizontal circulating boiler, which is inclosed and occupies a position directly over the elevated ovens. Under the name Twin Peerless, the company offer a range designed for the use of hotels, restaurants, boarding houses, &c. Following these may be mentioned the Columbian Victor, a builders' portable range made with right and left hand ovens; the Columbian Choice, a six-hole range made with right-hand ovens only; the Columbian Emblem, New Cappello, the Happy Home, the Columbian Expert and the Columbian Fairy ranges, the latter being made with flat grate only and with five holes in the top surface. The leading coal cook stove is the Columbian Merit, made with triplex grate, cast iron linings and capacious ash pan; followed by the Columbian Rival, and Fame, for wood only, and the Columbian Favorite, also intended for using wood as a fuel.

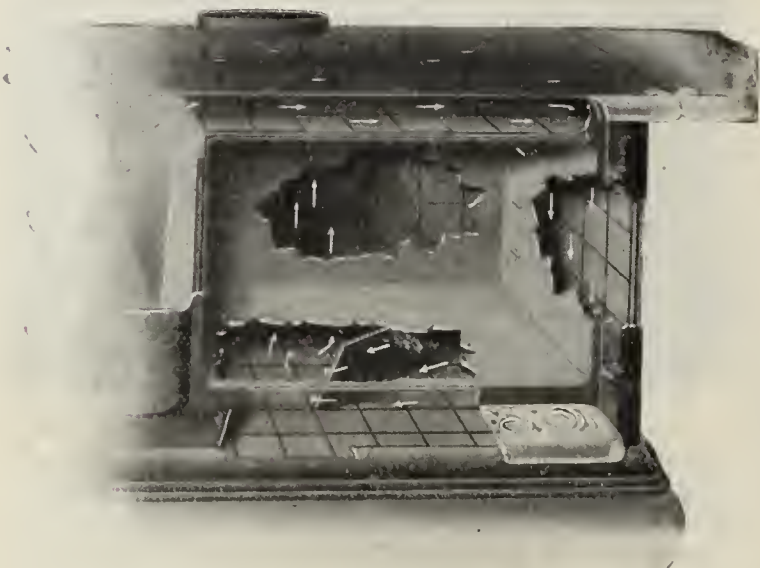
Among the heating stoves, attention is first invited to the Columbian Art Circulator, which is offered in two sizes. Following this is the Columbian Coral, a full reversible flue double heater in four sizes; the Black Diamond air tight double heater, made in three sizes; the Columbian Magic, a direct draft heater; the Columbian Oak, a double heater fitted with duplex grate; as well as various lines of globe, cannon, box and laundry stoves, fire plate heaters, air tights and school house heaters. The closing pages are given up to hot air and hot water furnaces, which are shown in a variety of styles accompanied by directions for setting, hollow ware, stove trimmings and a chapter relating to repairs. Illustrations are given showing the principal parts for which repairs are generally wanted, accompanied by explanatory text, which cannot fail to prove of convenience to the dealer.

ONE of the advertising novelties now being furnished by the Michigan Stove Company to their agents is a very attractive plate, to be fastened to a store door. This plate bears the frequently desirable winter injunction to customers to "Please close the door." It is made of tin, which is decorated with a silver finish, while the lettering is embossed in black. The plate also bears a request to those who read the notice to use Garland Stoves and Ranges.



### THE NEW P. P. STEWART RANGE.

The latest addition to the extensive line of P. P. Stewart ranges made by the Fuller & Warren Company, Troy, N. Y., embraces many unique features, and while constructed in accordance with the general scheme of Stewart cooking apparatus, embodies improvements not found in other makes. Prominent among these features may be mentioned the heat retaining oven with flues entirely surrounding five sides, thereby uniformly dis-



The New P. P. Stewart Range.—Fig. 1.—Broken View of Range, Showing Oven Construction.

tributing the heat. The oven top is cemented in order to keep the heat from striking too quickly into the oven, and the range bottom, end panels and back plate are also cemented in order to retain the heat in the flues. We present in Fig. 1 of the engravings a broken view of the range and the oven showing, by means of arrows, the course of the products of combustion as they leave the fire chamber and after passing round the oven escape through the flues at the back. It will also be seen from an inspection of the cut that the little squares which

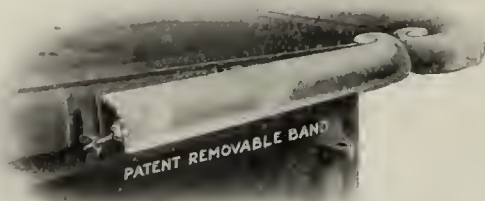


Fig. 2.—Method of Fastening in Place the Removable Nickel Band.

are cement and a nonconductor of heat are on the outer side of the flue. The result of this construction, the manufacturers claim, is "perfection in baking qualities with the greatest possible economy in fuel."

Another interesting feature in connection with this new P. P. Stewart range is the removable nickel work, the band and other parts which are nicked being easily removed for the purpose of polishing them or for blackening the stove. The band is held firmly in position by means of a thumb screw, the manner of attachment being clearly indicated in Fig. 2 of the engravings. The top band is made in three pieces, which lessens the danger of breaking and at the same time renders it much easier to clean and attach.

Still another feature of this range which will appeal to the wide awake and intelligent dealer as an important selling point is the construction of the skirting. The tendency of the times is to make the skirting on all ranges so deep that it is impossible to clean under it. The company, however, have arranged the false

front of the new P. P. Stewart to lift up so as to permit the cleanly housewife to sweep or clean under the range. The construction is such that the skirting can be lifted up with the foot and dropped back into place in the same manner without removing any bolts or other parts of the stove. When it is desired to hold up the skirting a brace falls into place, as shown in Fig. 3, and is made to slide back through a slot by a slight touch or gentle kick of the foot. The range is not disfigured by this plan, and it is impossible without close examination to determine the joint. The device is something entirely new and is controlled by the company's patents.

A point to which the manufacturers also call special attention is the sliding hearth, which is claimed to be a marked advantage over the so-called "swing" or "drop" hearth, as it affords a solid resting place for a full ash pan when removed from the pit and gives an opportunity to brush into the pan what few ashes may remain on the edges. Other features of the range include



Fig. 3.—Showing Method of Holding Up the Skirting.

direct draft damper with outside connection; dockash and triangular grates which fit the same bed plate and are therefore interchangeable and readily removable; special construction of the fire box, which is lined with heavy fire brick, and the water heater attachment for connection with a circulating boiler for the purpose of supplying hot water to various parts of the house.

The external treatment of the range is rich and effective, nickel being judiciously employed to form a striking contrast in combination with the black iron surfaces. A noticeable feature is the name plate on the oven door and carrying an oven indicator, showing at a glance the temperature within. This saves the cook the annoyance of constantly testing the oven in order to determine its condition for baking. The stove is made in four sizes with six boiler holes in the top surface, and in referring to the range the company state that it is "fitted with many novel devices which add to its convenience and its attractiveness and win the permanent regard of every family in which it is installed."

### Foundry Supplies.

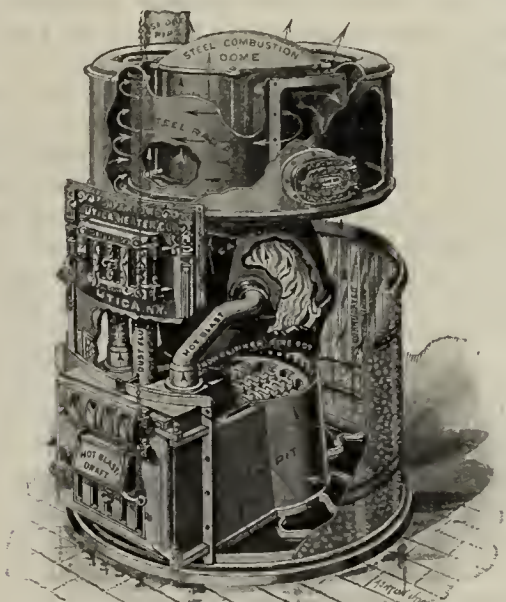
From their Detroit office the S. Obermayer Company have just issued the first number of a bright leaflet called "The Obermayer Bulletin of Foundry Information." It is intended to issue the "Bulletin" periodically, and devote it to subjects of general interest to foundrymen. The first issue is chiefly devoted to an examination of the molder by the editor regarding the chemical properties of pig iron. Of course the molder shows how little he knows about the subject, and the "chemist" conveniently steps in and answers the questions of the editor in dignified style. The answers are, however, put very plainly for a chemist, and there is no reason why the molder should not in time know as much about pig iron as his learned brother.



## THE NEW SUPERIOR HOT BLAST FURNACE.

In view of the present situation in the anthracite coal regions and the consequent scarcity of hard coal, special interest attaches to heating devices adapted to burning soft coal as a fuel. A furnace embodying features which particularly adapt it for using coal of this nature is the New Superior hot blast, which is being offered to the trade in all the usual sizes by the Utica Heater Company, Utica, N. Y. The manufacturers point out that this construction embodies the latest and most improved features known to modern furnace building and represents correct scientific principles, developed after many years of experience in the manufacture of heating apparatus. They also mention the fact that the hot air blast is the great principle involved in the construction of this furnace for burning soft coal and especially refer to the feature of injecting into the combustion chamber above the fire pot a large volume of highly heated oxygen, which, commingling with the nitrogen, sulphur and smoke arising from the fresh coal, thoroughly ignites and consumes these gases, thereby insuring a perfect combustion.

The castings of the furnace are made extra heavy with a view to durability and economy, and at the same



*The New Superior Hot Blast Furnace.*

time insuring the greatest amount of heat for the fuel consumed. Each furnace is mounted and fitted with special care, ample provision being made for expansion and contraction of the castings without bolted joints. The construction is such that dust, gas and smoke are prevented from penetrating into the hot air chamber of the furnace, and the manufacturers state that while they advocate cast iron radiators in this type of furnace they can furnish heavy steel radiators when desired.

## Royal Furnaces on the Pacific Coast.

The Royal Heating Company, 617 Mason street, San Francisco, Cal., are increasing the popularity along the Pacific Coast of the Royal line of hot air furnaces and steam and hot water heaters made by the Hart & Crouse Company of Utica, N. Y. At the present time they are installing an extensive hot air furnace plant in the palatial residence of Mrs. Maurice Casey. They are using a large size Royal furnace on their one-pipe system, the pipes in every case being made double with an air space between. In this instance three pipes lead from the furnace, each of which supplies six branches. These main pipes are of galvanized iron, 15½ x 29, 14 x 26 and 12 x 23 inches in size, and made double with ½ inch air space between. The company are also heating a large apartment house for Dr. Bowes, using two large size Royal hot air furnaces, and they are installing in a Convent at East Oakes a No. 77 Royal steam heating boiler. In the winery of Bradford & Sons, at Bruceville, the concern are using two No. 50 Royal wood burning fur-

naces for heating two sherry cellars, which are to be kept an even temperature of 150 degrees for 90 days at a time.

## PITTSBURGH SUPPLY COMPANY'S NEW CATALOGUE.

Catalogue No. 20 for 1902-3, which has just been issued by the Pittsburgh Supply Company, 227 to 233 Water street, Pittsburgh, Pa., is an unusually comprehensive presentation of goods for the gas trade. The contents comprise gas ranges, stoves, radiators, fire place heaters, stove trimmings and appliances, gas and gasoline burners for both heating and illuminating, pipe cutting machinery, gas fitters' tools and in short all kinds of supplies for the gas trade. It comprises 114 pages, is well printed and finely illustrated and is bound in heavy paper covers with an illuminated front cover.

The company's new gas range, the Avalon, is given first place, a number of pages being used in showing this most attractive range in a variety of styles. It is designed for the use of natural or manufactured gas, made in cabinet form as well as mounted on legs, with full cast iron or planished iron body, with or without an extension for water heater and in a variety of sizes to meet all requirements. The Regina, Colonial Regina Volcano, Edna, Edna Special and Solar are handsome new fire place heaters, which differ from one another in details of shape, burners, size and finish. Other gas stoves shown are the Classic, Multiple-Action, Empire Odin, Simpson, Peerless Queen, Capital, Yorktown, Acme, Success, Pittsburgh, Colonial Pittsburgh, Relda, Improved Duquesne, Economy, Victor, Erie, Gem, Imperial, Monarch, Yale, Harvard, Elite, Rococo and Special and Meteor Radiators, all of these being room heaters. They further show the Midget and Acme heaters for heating with hot air. The length of this list shows the thoroughness with which the company have covered the field of gas heating appliances. No less than five water heaters are illustrated—namely, the Monarch and Gabel, Instantaneous Automatic and the Rival, Lawson's and New Process boiler heaters. The New Process Broiler is an interesting special construction, consisting of a cast iron stove of ornamental appearance, 27 inches high, 13 inches wide and 25 inches deep, having a large burner on each side for vertically broiling meat, broiling both sides at the same time. The assortment of stoves is rendered complete by the usual hot plates.

The catalogue is sufficiently large to permit generous treatment to be given to the subject of gas stove and gas fitters' supplies. For this reason, if for no other, the publication should be of special interest and high value to the trade.

## The Bay State Home Grand Range.

The Bay State Home Grand range is the subject of an attractively printed eight-page pamphlet bound in colored paper covers, which is being distributed among the trade by the Barstow Stove Company, Providence, R. I. The claim is made that in this range are embodied all the latest features and improvements for minimizing the labor in cooking and obtaining the best results with the least fuel. The main top is devoted entirely to cooking space, and each hole in the top is rendered equally serviceable by reason of an ingenious arrangement of the smoke flue. The top is made in four sections, so that cracking and warping are reduced to a minimum, and the cost of repairs is also reduced, as when one section only is required it is not necessary to replace the entire top. The oven is large and ventilated, having triple heat retaining back lined with asbestos, large clean out cover in the oven bottom for examining the flue construction and aluminum plated oven back which reflects the light and clearly shows the condition of the baking. An oven rake extends across the oven bottom and is operated by a nicked pull in front, so that the contents of the oven may be drawn forward without reaching the hand into the hot oven. By means of a simple locking device the oven rack when pulled out to its full width remains rigidly in position, affording opportunity of turning around the roast or loaf, after which the rack



can be pushed back in position, while at the same time it is removed as readily as the ordinary rack. Four styles of grates can be furnished, according to requirements, and each style is removable through the fire door opening without disturbing the linings or the fire box parts. A feature of the external treatment of the range is the removable nicked parts for the purpose of cleaning them or blackening the range. The Bay State gas attachment can be supplied when desired, this being referred to as an ideal appliance for summer cooking. It consists of two gas cooking lids, which replace the ordinary covers on the back end of the range. The Bay State Home Grand is made in all sizes from that required by the small family up to the hotel size.

### ODD PLATES.

THE GOBEILLE PATTERN COMPANY, Cleveland, Ohio, of which Joseph Leon Gobeille is president and treasurer, have recently secured the services of R. H. Perdue, late advertising manager of the *Cleveland Leader*, to attend to the company's advertising and credits. Mr. Perdue, who has been elected vice-president of the company, is a young man of means and an artist of ability, and the company, in securing his services, have made an important addition to their staff.

A BLOTTER that is being distributed by the United States Register Company, Limited, 61 and 63 North State street, Battle Creek, Mich., bears a picture and some details of their well-known Jones Side Wall Warm Air Register, with a request that the trade should write to the company for catalogues, prices and testimonials.

A 16-PAGE CATALOGUE, intended for temporary use only, bound in paper covers of unique design and illustrating some of the leading lines of Hotel Ranges and culinary appliances which they manufacture, has just been issued by the Brand Stove Company of Milwaukee, Wis. The apparatus illustrated is made up with special care, three essential qualities being kept in view—namely, quick results, economy and lasting qualities. Brand's Wrought Steel Hotel Range, which is illustrated in several varieties, is made for either hard or soft coal or wood and with any style of top desired. Illustrations are also given of Brand's Wrought Steel Hotel Laundry Stove, Portable Ovens, Steam Tables, Carving Tables, Urns, &c. The company announce that a complete catalogue, illustrating the full line of Hotel Ranges and other appliances which they manufacture, is in process of preparation and will be issued to the trade as soon as ready. An interesting feature of the present catalogue is a bird's-eye view of the company's works.

THE SPILLER MFG. COMPANY of Austin, Texas, have been incorporated with a capital stock of \$10,000, to manufacture Stoves, Oil Burners, &c. The incorporators are P. S. Spiller, J. K. Dorman, C. L. Test and H. P. Hilliard.

THE death of Edmond T. W. Richmond of the Richmond Gas Stove & Water Company, Limited, of London and Warrington, England, occurred on September 4 from concussion of the brain, the result of a bicycle accident met with while touring in Cornwall. Mr. Richmond, who was only 38 years of age, was the founder and head of the large Gas Stove manufacturing concern which bears his name. He visited the United States last year.

THE ROCHESTER RADIATOR COMPANY of Rochester, N. Y., have lately been incorporated with a capital of \$20,000, all paid in. The officers are: William M. Hunt, president, and Frank E. Williams, secretary and treasurer. The company make a specialty of Radiators for connection with the smoke pipes of Stoves and other heating apparatus. They have celebrated their tenth anniversary by incorporation, and have issued a little pamphlet entitled "Tenth Anniversary Souvenir," devoted largely to "Fun and Facts." The main portion of the book contains a number of witty sayings interspersed with remarks about the Rochester Radiator, while the last pages are devoted to a complete explanation of that device. The company state that in the past ten years, through persistent effort and extensive advertising, they have established a demand for the Rochester Radi-

ator in every State and Territory of this country and in foreign countries. The "Fun and Facts" souvenir can be secured on application.

THE FOX FURNACE COMPANY of Cleveland, manufacturers of Furnaces, will enlarge their plant at Elyria, Ohio, and will engage in the manufacture of other lines of goods. The plant has been enlarged twice within a year and the new shops will double their capacity.

A. L. CANFIELD, 284 Pearl street, New York, is interesting the Stove dealers this year in the varied line of Monarch Gas Heaters and Radiators. One of these Heaters is so constructed that it can also be used as a hard coal Stove. He is also showing the Reliable and Electric Oil Heaters, the demand for gas and oil heating apparatus being active on account of the difficulty in securing coal for fuel.

THE MICHIGAN STOVE COMPANY are supplying their customers with timely advertising suggestions. They furnish a large sheet, which shows many styles of advertisements which will greatly assist busy merchants in preparing desirable advertising matter for their local newspapers. Another sheet gives suggestions for local reading notices. These notices are prepared by a person of experience in handling matters of that kind, and are not only practical, but are well calculated to arrest the attention of the reader. The company furnish the necessary electrotypes of their trade-mark or of their Stoves to be used in these advertisements.

THE WESTERN FOUNDRY COMPANY, LIMITED, of Wingham, Ontario, have just issued an announcement to the trade to the effect that they have entered into the business of making a specialty of the manufacture of Ranges. The company have purchased a large and thoroughly equipped plant occupying  $3\frac{1}{2}$  acres of ground at Wingham and so located as to give admirable shipping facilities. Their patterns are constructed on modern lines, embodying novel and unique features designed to afford satisfaction in cooking operations, combined with an economical consumption of fuel. The goods will be offered under the name Huron, this being the trade-mark the manufacturers have adopted. The men prominently identified with the company are F. J. Taylor and J. J. Cunningham, who are familiar to the Canadian trade, having been identified for many years with a large Stove and Range company in the Dominion. The announcement to the trade is sent out in a style to attract attention, and among the illustrations presented is a bird's-eye view of the office and works.

THE GOLD COIN STOVE COMPANY of Troy, N. Y., and the Chicago Stove Works of Chicago, Ill., are offering the trade some handsome constructions in the way of Base Burners for using hard coal. Prominent among these may be mentioned the Marvel, a medium priced Heater embodying the essential features of the higher grade goods; the Ideal Gold Coin, a richly furnished full nicked Double Heater, and the Original Gold Coin Ventiduct Base Burner, which is offered in its new twentieth century dress.

WM. S. ESSICK, for some time past secretary and general manager of the Reading Stove Works, Orr, Painter & Co., proprietors, Reading, Pa., will resign his position with that company about October 1. We understand that Mr. Essick has thus far made no new connection.

THE Stove Salesmen's Association of Pennsylvania, with headquarters in Philadelphia, Pa., announce that a theater benefit will be given at the Chestnut Street Theater, in that city, during the week of November 10 to 14, the attraction being "The Billionaire," by Jerome Sykes. The proceeds of the benefit are to be applied to several purposes, the principal one being toward the success of the sixth annual banquet of the association, which will be held some time in December, and which, it is expected, will eclipse by far any of their previous efforts in that direction. The committee having the benefit in charge consists of H. E. Borzei, chairman; Fred. Sabin, John McLaughlin and W. T. Halowell, secretary, 111 North Second street, Philadelphia, from any of whom tickets may be obtained.

THE THATCHER FURNACE COMPANY, 240 Water street, New York, suggest to dealers that it will pay them to



write for catalogue of and prices on Thatcher Furnaces, Ranges, Steam and Hot Water Heaters, &c. These goods have been on the market long enough for them to establish an enviable reputation, and the company point out "that there's something in having borne a good name for 52 years."

THE CHAMPION STEEL RANGE COMPANY, Cleveland, Ohio, have been distributing with their compliments a poster calendar for the remaining months of the year and for the 12 months of 1903. It is lithographed in colors, bound at top and bottom with metal strips, and is furnished with an eye for hanging it in a conspicuous place. The poster calls attention to the Champion and Marquart Double Flue Hot Blast Steel Ranges, which the company manufacture in many varieties. These constructions embody modern features, and are furnished in three styles of finish—japanned, polished steel and Russia iron. Special attention is called to the flue construction, more particularly the double flue below the oven which leads from the outside draft to the fire box, thus furnishing a hot air blast to the fire. The manufacturers claim that by this arrangement intense heat is secured with a minimum consumption of fuel.

THE present high price of anthracite coal and the prospect of there being more or less of a scarcity of this kind of fuel for some little time to come serve to draw attention to the many devices now on the market designed to utilize some of the waste heat which usually escapes to the chimney. Prominent among these may be mentioned the New Era Radiator, made by Wilmot Castle & Co., 76 Elm street, Rochester, N. Y., who claim that by the use of this form of Radiator a person can get as much heat out of one ton of coal as would be derived from two tons without it. The company also announce that they make a special Radiator for soft coal, and intimate to dealers that October is a great month to sell them.

LORD, STONE & Co., Otter River, Mass., have found it necessary, owing to the increasing demands of the trade, to secure additional accommodations. They have just leased additional room, and with their increased facilities expect to be able to fill orders more promptly than before.

THE HOME PRIDE RANGE COMPANY of Marion, Ind., have just filed papers of incorporation for the manufacture of Cook Stoves and Ranges, the capital stock being placed at \$25,000. The directors are C. W. Haldeman, O. C. Haldeman and Robert C. Houston.

THE GRISWOLD MFG. COMPANY, Erie, Pa., have recently purchased a new site for their plant adjacent to the railroads, thus giving them increased shipping facilities. This fall they are moving about half of their equipment, and in the spring they intend to put up a large foundry so as to have their manufacturing facilities concentrated in one place. A 40-page pamphlet, which the company have recently issued, sets forth the merits of the Classic and Erie Gas Ranges, Hot Plates, Ovens and other Gas Cooking Appliances which they manufacture. Within the pages the many improvements which the company have incorporated in their goods are described and the new patterns which have been added to their already extensive assortment are illustrated, accompanied by an enumeration of their leading features.

THE BACKUS COMPANY, Brandon, Vt., show their leading lines of specialties in a neatly printed catalogue of oblong shape which they have issued from the press. The Backus lines include Portable Steam Radiators for gaseous fuel, Radiating Mantels, Tiles, Open Fire Places, Gas Logs, &c. The company state that an entire house can be heated by means of the Backus Patent Steam Radiator Heater, and that there are now 30,000 of these in use.

CHRISTOPHER B. PORTER, head of the firm of C. B. Porter & Co. of Philadelphia, manufacturers of Tinware, &c., died on September 22, at his home in that city, aged 78 years. Mr. Porter was one of the pioneer Tinware manufacturers of Philadelphia, and his company are among the old established and most important

concerns in their line in that city. The funeral services were held on Friday, at his former residence, 1612 North Broad street.

### Tropical Oil Heater.

The Holmes, Boeth & Haydens Company, 37 Park place, New York City, have taken advantage of the present condition of the fuel supply in the East, caused by the anthracite coal strike, to bring forward their Tropical oil heater, a view of which is given in Fig.



No. 25

Tropical Oil Heater.—Fig. 1.—View of Heater.

1. This heater is made in two sizes, the larger one, suitable for bathrooms and bedrooms, having a No. 3 fount holding one gallon of oil, and the smaller one having a No. 2 fount holding two quarts of oil, the latter being adapted for use in smoking rooms, libraries or small apartments. These heaters are exactly similar in appearance and are, respectively, 25 and 21½ inches in height to the top of the bail handle. They are finished in black japan with nickel plated trimmings and are guaranteed to be both smokeless and odorless. The large heater, known as No. 35, weighs 25 pounds

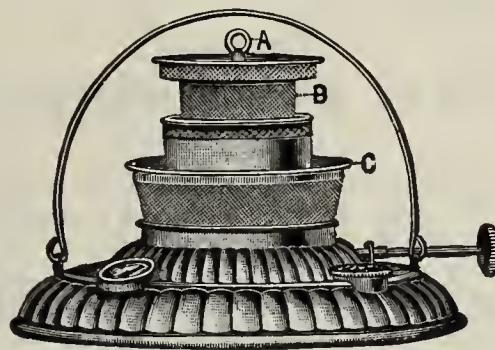


Fig. 2.—View of Burner.

and takes a No. 3 Perfection wick, and the smaller, or No. 25, shown in the cut, weighs 15 pounds and takes a No. 2 Perfection wick. The heaters are equipped with a covered wick flame spreader. In Fig. 2 is given a view of the burner, which indicates the character of the flame and of the operation of the heater. It is pointed out that the heater cannot smoke, as the stop nut, A, limits the upward movement of the flame spreader, B, and the flame spreader, B, limits the upward movement of the wick. The gallery, C, is detachable by unscrewing for the purpose of cleaning and rewicking. These heaters are claimed to be absolutely safe in use and to give a maximum of heat at a minimum of cost. They will warm up an ordinary room in a few minutes, providing a comfortable heat at a much less cost than if coal were burned.



## THE PLUMBING AND STEAM SUPPLY LEAGUE.

All arrangements have been completed for the bowling tournament of the Plumbing and Steam Supply League for the winter of 1902 and 1903. It will be opened in the Monarch Palace Alleys at Twenty-sixth street and Sixth avenue, New York, next Monday night. It is expected that all the officers will be present on that occasion. The officers are: President, Martin Behrer; vice-president, C. V. Driggs; secretary, W. G. McCormick; treasurer, Fred. Lowe; captain, W. S. Emery; Board of Managers, A. E. Good, W. B. Ogg, A. B. Beith, William M. Murray and William Waldenberg. Owing to his familiarity with the work, ex-Secretary Rollin C. Wilson has acted as secretary and made out the schedule, which is being prepared for distribution. He has sent out the following letter to the captains of the various teams, giving the schedule for the first two weeks of the tournament:

The schedule for the first two weeks' rolling in the coming tournament is given below. The *Plumbers' Trade Journal* is printing a complete schedule, which will be out shortly.

We trust as many as possible will be on hand at the Monarch Palace Alleys, Sixth avenue and Twenty-sixth street, on the opening night, Monday, September 29.

First game commences at 8.15, preceded by half an hour's practice.

Monday, September 29:

*Plumbers' Trade Journal*, *The Metal Worker*, Behrer & Co.

Tuesday, September 30:

F. N. Du Bois & Co. (Apex), F. N. Du Bois & Co. (Dia.), National Lead Company.

Wednesday, October 1:

Salesmen, H. P. Read Lead Works, Manufacturers.

Thursday, October 2:

E. S. Wheeler & Co., Ronalds & Johnson Company (New York), Ronalds & Johnson Company (Brooklyn).

Friday, October 3:

John Simmons Company (No. 1), John Simmons Company (No. 2), Ashcroft Mfg. Company.

Monday, October 6:

Crane Company, Ronalds & Johnson Company (Brooklyn). Crane Company, John A. Murray. Colwell Lead Company, Ronalds & Johnson Company (Brooklyn).

Tuesday, October 7:

Jenkins Bros., E. F. Keating, Lalanc & Grosjean Company.

Wednesday, October 8:

Central Foundry Company, Ashcroft Mfg. Company, *The Metal Worker*.

Thursday, October 9:

Fred. Adee & Co., Dimock & Fink Company, *Plumbers' Trade Journal*.

Friday, October 10:

Behrer & Co., Manufacturers, Du Bois & Co. (Apex).

Monday, October 13:

Crane Company, E. S. Wheeler & Co., Salesmen.

## A FUEL OIL BURNING APPARATUS.

BY NEEDCESSITY.

I have noted the different inquiries for fuel oil burners in *The Metal Worker*, and while I do not recommend my apparatus to be absolutely the best ever proposed and the most complete and only true solution of the problem I give it for what it is worth. I needed a burner, being in a locality where there was an abundance of all sorts of juice that could be called all things, from crude to refined, and not miss it by more than half a peck in any direction. I wanted to burn this somewhat after the manner that natural gas can be burned. Now the natural gas ordinarily flows at a high pressure, needing a reducing valve, and as it hustles through the orifice it draws in an abundance of air through openings in the mixing chamber to get the desired mixture for combustion. Here was a problem for me, and here is my solution of it:

I had one of those double acting air pumps, having a cylinder about 3 inches in diameter and something less than a foot long. I hitched this up to some piping with stop cocks on it, one pipe leading to the top of the receptacle containing my fuel oil, the other leading to an old galvanized iron range boiler, which, fortunately for me, was air tight and available for use. This boiler was of about 40 gallons capacity. By means of the pump and some elbow grease I could get a pressure of about 80

pounds in my air tank, as shown by a pressure indicator hitched to one of the openings in it. I had a similar indicator on top of my fuel tank, so that it was an easy matter for me to get any pressure under 80 pounds in both oil and air tanks. I used this in connection with a burner that was placed in a round cylinder for heating a large caldron. I took a 1½-inch pipe and made a flat spiral coil. This was something of a job. I drilled this coil with a small drill to make orifices for my fuel to escape through and connected this on the outside of the fire chamber with the air and oil tanks by means of a tee connection. A jet of oil was shot through a small orifice into the tee and struck against a little cross bar that I had fastened in the tee to cause the stream to be broken up into a sort of spray, so that the compressed air coming in would carry this spray of oil forward through the coil to the orifices, where there was no difficulty in lighting it. The longer the burner was in operation the hotter it became, and this had a tendency to gasify the oil, and to give a flame of intense heat.

My gimcrack has answered my purpose, and as there are no patents on it it is open to the use of whoever may desire to make one and try it.

## The F. & M. Pipe Hangers.

Both steam fitters and plumbers are interested in convenient devices for supporting the flow and return pipes of heating and plumbing systems, and those capable of



Fig. 1.—For Steam Fitters.

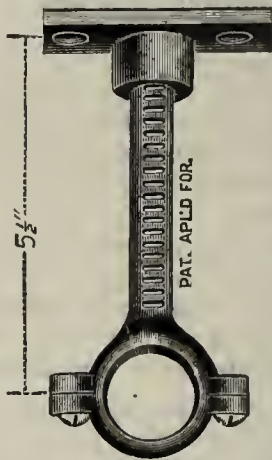


Fig. 2.—For Plumbers.

The F. & M. Pipe Hangers.

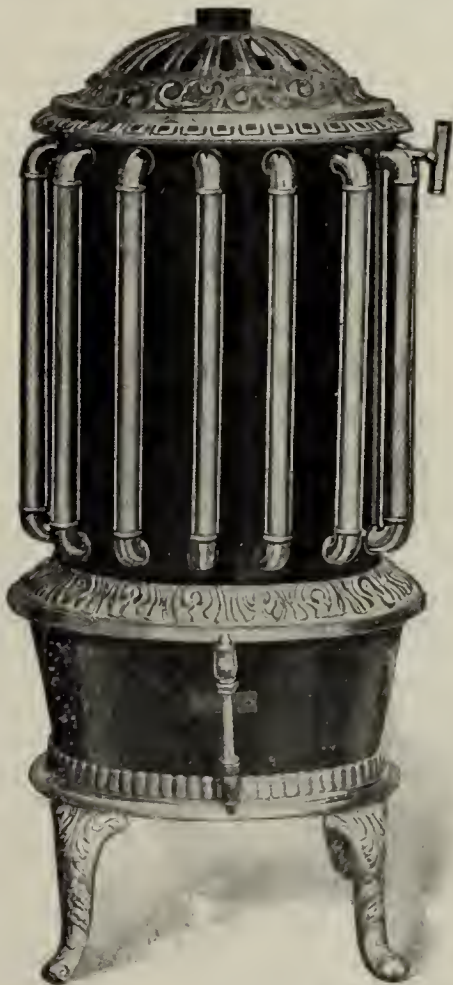
adjustment are of the greatest convenience. In the accompanying illustrations we show two pipe hangers made by Fee & Mason, 68 Beekman street, New York, which have this valuable feature. The design shown in Fig. 1 is especially intended for steam fitters' use, being made for all sizes of pipe, from ¾ to 8 inches in diameter. The hanger shown in Fig. 2 is more strictly adapted for the use of plumbers. Having a grooved stem it is capable of an adjustment of about 3 inches. This is made for all sizes of pipe, from ¾ to 2 inches. Circulars giving full particulars of these goods have been issued by the makers.

"I HOPE YOU WILL TURN ME OVER BEFORE YOU TURN ME DOWN," is printed on the address side of a mailing card issued by the Judson A. Goodrich Company, 105 Beekman street, New York, and which states that S. D. Bruce will shortly call on the trade to which it is sent, in the interests of the high grade Steam Specialties made and handled by the house, including the Floor and Ceiling Plates of the Beaton & Bradley Company and the extensive line of Water Seal and Automatic Air Valves made by the company.



THE ECONOMY STEAM RADIATOR.

In the accompanying illustration is shown the Economy steam radiator, designed for heating rooms, and made in portable form so that it can be readily taken from one room to another. This radiator, which is made by the Water Heating Mfg. Company, 211 Fifth street, Milwaukee, Wis., consists of a small boiler heated by gas until steam is generated, which fills a series of pipes, presenting a large radiating surface and increasing the efficiency of the radiator. It is so arranged that the steam condenses and the water runs back into the reservoir or boiler to be reconverted into steam. The burner consumes about 12½ feet of gas per hour, and when turned on full will in a short time raise a full head of steam and heat the radiator. After this, the generation of steam can be continued with the burner supply shut off



The Economy Steam Radiator.

so that the consumption is but one-third. It is claimed that on account of the steady heat the radiator is capable of heating two fair sized rooms to a comfortable temperature in midwinter. The radiator is finished in three styles, with a black enamel body and trimmings, with bronze trimmings, or with nickel trimmings. When furnished with bronze trimmings the whole radiator can be finished in gold, silver or aluminum bronze, as desired.

A SHOP TIME SYSTEM.

The system used for keeping track of men's time in jobbing by L. H. Toucey & Co., Waterbury, Conn., while simple, answers the purpose very well. Time tickets, measuring 3½ x 6 inches, such as are shown in Fig. 1, are placed in the shop so as to be of easy access to the men. When sent out on a job the mechanic takes one of these tickets, writes on it the name of the house or building where the work is to be done, and on the next line writes his own name. On returning to the shop he fills in the number of hours the work has taken, the name of his helper, if he had one, the number of hours he spent on the work and the date. Below this he places a list of the material used. Should the job require any work in the shop the time so spent is noted and is placed in the space provided for it at the bottom of the slip. It will be seen that a separate slip is made out for each job.

These slips are placed in a box provided for them and are collected and taken to the office each night. From the information given on them the charges are made and the time of each man recorded.

The system used in recording the men's time is shown in Fig. 2. This card is tacked on the wall directly over the bookkeeper's desk. On it is a list of the names of the

TIME TICKET. THE L. H. TOUCEY CO

Name *P. H. Smith*

Work done by *Dan* 3 hr.

Help *Harry* 3 hr.

Date *May 14*

MATERIAL

*New trap under laundry tub.*

*2 ft pipe*

*3 lbs solder*

*Charcoal*

No. hr Shop Work

A Shop Time System.—The Time Card.

men employed in the shop and the days of the week. Each morning the bookkeeper takes the time tickets of the previous day, and from them marks the number of hours that each man has worked, marking an X when he has been absent. This serves as a time record for the week. At the end of the week the total hours are added up and the workman is paid according to the time recorded. Should any mistake be made during the week the man has an opportunity of calling attention to the fact, as this time card is placed where he can

| NAME           | Mon. | Tues | Wed. | Thur. | Fri | Sat. | Total |
|----------------|------|------|------|-------|-----|------|-------|
| <i>Joe</i>     | 9    | 9    | 9    |       |     |      |       |
| <i>Rhodes</i>  | 9    | 9    | 9    |       |     |      |       |
| <i>Dan</i>     | 8    | 9    | 9    |       |     |      |       |
| <i>William</i> | x    | x    | x    |       |     |      |       |
| <i>Walter</i>  | 9    | 10   | 9    |       |     |      |       |
| <i>Henry</i>   | 9    | 9    | x    |       |     |      |       |
| <i>Duggan</i>  | x    | x    | 9    |       |     |      |       |

Weekly Time Record.

see it at any time. After the wages have been paid a fresh piece of ruled paper is pasted over the record of hours worked and the same system followed out for the next week, no permanent record or regular time book being kept. This system, it is stated, has proved itself to be very satisfactory for a shop of moderate size and has the advantage of not entailing too much red tape.

The Metal Worker acknowledges a very courteous letter from Rollin C. Wilson, acting secretary of the Plumbing and Steam Supply League, expressing the appreciation of the members for the prize of a fine fob chain, presented by The Metal Worker, for the bowler making the smallest percentage of breaks in the League bowling tournament this winter.

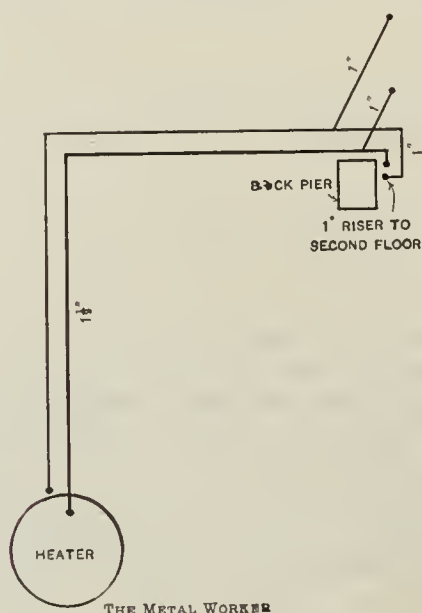


## SIMPLE SNAGS IN HOT WATER HEATING.

BY Q.

The "snags" one lands up against sometimes in hot water heating are peculiarly exasperating, and often because of their apparent simplicity. One's inability to give the exact reason for the non-circulation of a radiator, combined with his memory of having connected up other radiators on other jobs in the same way where they worked certainly tends to loosen his self esteem. We have had 'em, and so often, that when we meet a man who tells us he never has a failure, everything lovely every trip, we think of that ancient fish story and reflect that we are sometimes "something of a liar" ourselves. This is not intended as a solo, entitled "How Smart We Are," but merely short plain accounts of "Snags We Have Met and How We Met Them."

If you are looking for dividends from hot water heating work it is essential that the labor account be carefully looked after. See that the workmen have no pet theories of their own to exploit, and so consume your time in that or other undesirable ways. It is not enough that changes be made in work that will



Simple Snags in Hot Water Heating.

correct faulty circulation. The alterations should be made on the simplest, not the most elaborate, plan. It is here that thought plays a most important part, and in nine cases out of ten a half hour's study will develop a plan easier, simpler and less expensive than the one of first impulse. An example of this is as follows:

The accompanying illustration shows a very common form of trouble with first floor radiators connected near a set of risers. The return of the risers backed up into the first floor radiator and stopped circulation. The fire was drawn, the system emptied and refilled before making a second test. This we consider necessary as no positive test can be made of a small job unless it is started from cold water. If it will not circulate properly and evenly from the beginning you can commence making alterations (excepting, of course, the case where an obstruction may be in the piping).

We give most of our small work a second test, to be sure about it. In this job a second test had been made, and the fitter had taken down the mains back to the heater by the time we arrived. His object was to place the tees further away from the risers to avoid the influence of the return riser. On the ground that the return is many times more often the defaulter than the flow the fitter was wrong in taking down the flow main. The changing of position of the return tee alone would have accomplished his end just as well, if it would have accomplished it at all. However, we were in time to prevent the change costing more than necessary, and after getting the original mains up again we

took a plug out of the top of the feed section of the radiator and connected to that opening. This change could have been made in less time than it required to take down his mains. It worked admirably. We merely suggest the case as one showing the possibility of saving money on such occasions. We don't like the appearance of top connections on radiators, hence our reason for not making such connection in the first place.

Reverting to the method of curing this trouble which the fitter was about to adopt, we recall a case somewhat similar, which came up to us in February last. We had sold a heater to a man who had been a fitter, but is now engaged in other business. A friend of his had bought a house and besought this one time fitter to put in a hot water system for him. When the work was ready he tested it and found that the basement dining room radiator refused to circulate. He made a number of changes in the location of the tees, always moving them to relatively the same positions. Finally he came to us and described the case, which corresponded almost exactly to the one above shown. As there was no plugged opening in the top of the dining room radiator, and it being another fellow's job, we advised him to extend the return only back to the heater. This he did and reported the same evening that the circulation was all right. We have always found this method to work.

## Acetylene Supplies

R. Williamson & Co., 452 Milwaukee avenue, Chicago, Ill., are issuing a 200-page catalogue, having a well arranged index, devoted to acetylene gas fixtures, appliances, glass ware, brass goods and tools, that will be of interest to those who install acetylene gas plants and do ordinary illuminating gas lighting work. The first section of the catalogue presents two and three light chandeliers and church and store pendants, having several lights. These are made in a variety of styles and of the combination character, and are adapted for both gas and electric lighting. The manufacturers have a variety of particularly pleasing designs, and the glass ware used in connection with their portable table lamps, as well as their pendants and chandeliers, are particularly attractive. The catalogue shows a variety of pendants that are capable of being lowered for use as reading lamps; staple and fancy brackets made in a variety of styles and of excellent finish, hall lights and lanterns, and also lamps and lanterns for out of door use, designed to be attached to a bracket on a side wall or supported by a metal or other post in the ground.

Another section of the catalogue is devoted to an extensive variety of acetylene gas burners adapted for small lights, or for lights of a high candle-power. Acetylene burner cleaners, suitable for the various burners, are also shown. Gas lighters, tapers, wire guards for gas and electric globes, cement, mirror reflectors, shades for house lights and also for different lights for bowling alleys and billiard tables are presented, followed by hose, ceiling plates, seating rings, hooks and tubing required by the gas fitter. Pressure gauges, testing pumps, blow pipes, dies, pipe cutters, vises and tools, torches, fire pots and an extensive variety of brass fittings suitable for making up gas fixtures and for connecting gas piping and stop cocks for cellar mains complete the catalogue.

## The Kellogg-Mackay-Cameron Company Catalogue.

A new catalogue, 5¼ x 7½ inches in size, bound in a green cloth cover and consisting of 333 pages, has just been issued by the Kellogg-Mackay-Cameron Company, Chicago, Ill. On the first page are presented pictures of the offices and manufacturing plants of the company in different cities. The introduction calls attention to the extensive variety and large stock of heating appliances carried by the company, enabling them to make prompt shipments to those who favor them with their orders. The first 75 pages are devoted to boilers, including cast



iron vertical sectional boilers for steam and hot water heating, sold under the names American, Advance and Model, also the Florida, Soleil, Touraine and Ontario steam boilers of the round and horizontal sectional type. The catalogue also shows tank heaters. Under the name Tobasco, Great Northern and Kewanee, a variety of wrought iron boilers are shown adapted for all classes of work, including the high power, horizontal tubular construction. Another section of the catalogue is occupied by a variety of styles of direct, direct indirect and indirect radiators, with full details and dimensions, such as are indispensable to the constructing steam fitter. Another section of the catalogue is devoted to both wrought and cast iron pipe, and the extensive variety of fittings, cast and malleable, used in connecting the pipes for plumbers' drain pipe, steam and hot water heating and for gas piping. These goods are followed by a large and varied line of brass goods, including unions, valves, radiator valves, air valves, safety valves, gauge cocks, water columns, &c. In another section are shown draft regulators, back pressure valves and a full line of steam traps and steam appliances such as are used in the modern power and heating plant. The last section of the catalogue contains steam fitters' tools for cutting and threading pipe by hand and by power and a number of pages at the back are devoted to tables of useful information, a telegraph code and a well arranged index.

### Hartford Master Plumbers' Outing.

The first occurrence of what is intended to be an annual event was the outing and sheep bake at Lake Compounce, Conn., on Friday, September 19. This was under the management of a special committee of Hartford master plumbers, composed of B. Lyon, J. L. Purcell, W. E. Mahoney and T. E. Oakes. The Master Plumbers' Association of Hartford and the Master Plumbers' Association of New Britain joined in the outing and met at the lake. Among those in attendance were the following: S. Adams, J. F. Duffy, ex-Alderman J. I. Dunn, John L. Purcell, W. A. Murray, George S. Bull, T. F. Darling, Thomas Oakes, T. H. Langdon, R. M. Starbuck, G. Cope, Frank Ellison, Charles Denton, M. Hogan, W. B. Hogan, B. Lyon, President Health Board Edward Mahl, George Mahl, T. McGrath, Plumbing Inspector John H. Maloy and Health Inspector Louis F. Eisele; New Britain, F. E. Burns, A. E. Weiant, Harold Damon, S. L. Hinchliffe, J. Erickson, P. Quinlan, C. H. Fay, J. A. Kelly, J. Newhoff, O. J. Toomey, J. B. Weiant, William Emly, T. Reilly and J. A. Rising. The plumbers joined in a series of athletic contests and games and had a very enjoyable time, which culminated in a sheep barbecue and corn dinner. This was partaken of by the members and their guests, who numbered about 50, the guests including representatives of the different supply houses and members of the local Boards of Health.

### New York City Notes.

Business is good in all lines. There are many large jobs in the market and many more well under way. Jobbing and overhauling work is excellent, and when the plumbers begin to get in the money for work done all in the business will be able to buy coal this coming winter.

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James Armstrong seems to have got his share of the big plumbing jobs lately given out. He has the work in the Battery Place Building, occupying the block between Washington and West streets, facing Battery place. This is a large "sky scraper" and will be strictly up to date. He also has the new building for the New York Telephone Company at 346 to 352 West Seventeenth street and a new business building on the site of the famous A. T. Stewart mansion at the corner of Fifth avenue and Thirty-fourth street, which is owned and will be occupied by the Knickerbocker Trust Company.

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O'Brien & Ryder are working on one of the largest factory buildings down town, the Butterick Building,

which takes in the block of Macdougall, Spring and Vandam streets. Byrne & Murphy are busy in some business buildings being put up by Henry Corn at 474 and 476 Broadway, running through to Crosby street; at the corner of Fifth avenue and Fourteenth street and at the corner of Fifth avenue and Eighteenth street. They also have work in loft buildings at 193-197 Centre street and at the corner of Thirteenth street and Ninth avenue.

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J. J. Kuhn is busy with eleven private houses on 137th street between Seventh and Eighth avenues, and M. Hughes has four private houses in this same block. W. G. Cornell is plumbing the stable and storehouse of the Siegel-Cooper Company, at 249 to 255 West Seventeenth street, running through to Eighteenth, and also the bank building at the corner of Wall and Pearl streets.

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James Fay has his various school jobs in the different boroughs so well under control that he is taking his first vacation in 15 years. He is making a trip to the "old country." Mr. Fay is expected back about November 1. Just before leaving he obtained the contract for the Morris High School, at Boston avenue and 166th and 167th streets.

## Heating and Plumbing Notes.

THE British Institution of Heating and Ventilating Engineers are holding a two days' meeting in Birmingham, England, this week.

THE JUDSON A. GOODRICH COMPANY, 105 Beekman street, New York are sending to the trade several circulars that are of special interest at this season. One is devoted to several styles of automatic air valves adapted for both steam and hot water plants and for vacuum heating systems. Another circular is devoted to a variety of styles of Globe, Gate, and Radiator Valves.

THE CLEVELAND STEAM FITTING & SUPPLY COMPANY of Cleveland, Ohio, have the contract for installing a Webster system of heating in the plant of the Hill Clutch Company in that city.

WILLIAM HAAS, 57 Grand street, New York, makes an improved Pipe Cutter, in three sizes, capable of cutting pipe up to 6 inches in diameter. The Cutter is constructed to encircle the pipe and has a tooth cutter so arranged in relation to rollers as to enable the Cutter to be run around pipe in a true line. It is said to leave the ends of the pipe perfectly square and without a burr.

THE R. C. MCCLURE COMPANY, Syracuse, N. Y., are sending to the plumbing trade a desk blotter intended to remind them that the concern carry a complete line of Plumbers' and Steam Fitters' Supplies, which fact is further impressed upon those who receive the blotters by the handsome half-tone engraving, giving a view of the fine goods displayed in the company's show-rooms.

THE L. J. MUELLER FURNACE COMPANY, Milwaukee, Wis., are sending to the steam fitting trade several circulars and pamphlets. One of 20 pages is devoted to Air Valves, Altitude and Steam Gauges, Expansion Tanks, Pipe Covering, Hot Water Storage Tanks, Back Pressure Valves, Steam Traps, &c. Another is devoted to Hot Air Furnace Fittings, such as Partition Stacks, Register Boxes, Shoes and Boots, Elbows and Dampers. Another folder contains a price-list of the company's Hot Air Furnaces and Combination Heaters. A little pamphlet is devoted to the Milwaukee Draft Regulator, designed to be used in connection with all kinds of heating apparatus for keeping a steady fire and an even temperature in the building in which it is used. Another circular shows, by means of general and broken views and by views of different parts, the construction and fire and water travel and the features of merit of the Mueller Steam and Hot Water Boilers.

THE AMERICAN BLOWER COMPANY, Detroit, Mich., are building an addition to their plant, consisting of a machine shop, 50 x 60 feet. They are also adding a



third story to a part of the old plant. The additions will cost about \$6000.

T. MCGARR, secretary of the New York State Commission of Lunacy, Albany, N. Y., will receive bids until October 15 for a ventilating system for the north wing of the main building and for plumbing improvements in the branch infirmary at Albany, N. Y.

THE patrons of the York Steam Heating Company, York, Pa., have been informed that the rates will be advanced 10 per cent. over the rates of last year.

A COMMITTEE of master plumbers in Richmond, Va., are making arrangements for a convention of the Atlantic Division of the Master Plumbers' Association, which comprises the master plumbers in several coast States.

THE plumbers of Bay City, Mich., have decided to stop putting goods in that have been purchased by customers outside of the State. They hold that the plumbers should have the opportunity of making a profit on the goods, to help compensate them for the knowledge of their business required in installing them, in addition to payment for their labor.

THE daily papers of Kansas City, Mo., report that a strike among the local plumbers went into effect on September 17.

THE BUCKINGHAM-ROUTH COMPANY, New Haven, Conn., are installing five Ideal Boilers in a block of buildings for Ernest Wadewitz, and also an Ideal Boiler in the residence of Prof. Henry Farnam in New Haven.

A FIRE doing extensive damage visited the Duquesne Sanitary Company, 226 Second avenue, Pittsburgh, Pa., last Saturday. The building is six stories in height, and before the fire was under control the fourth and fifth floors were completely destroyed, with the stock. The damage to the building and the stock is estimated by the company at about \$75,000, which is partly covered by insurance.

THE GARNETT VALVE COMPANY, 40 Dearborn street, Chicago, Ill., are sending to the trade a 16-page pamphlet devoted to the Bigelow Self Closing Basin Faucet, which has no springs or packing; does not pound; never drips, and closing with the pressure is simple and easy in operation. A sectional view renders the merits of the Faucet readily understood.

MUSTEE BROTHERS, 204 Cedar avenue, Cleveland, Ohio, are distributing among the trade a little pamphlet devoted to the Marvel Hot Water Heater, which is designed for using gas, and can be used in connection with the ordinary boiler for storing hot water or independent of it, as convenience may dictate.

EMMETT MARTIN, Fort Wayne, Ind., is sending to the trade a four-page pamphlet devoted to the Martin Cellar Trap, which has been extensively used by the plumbing trade, and is designed not only to form a trap seal against sewer gas, but also to prevent sewage or back water entering a cellar.

A VACUUM steam heating system will be used in the City Hall at Brockton Mass.

THE PITTSBURGH HEATING & VENTILATING COMPANY have awarded the contract for the erection of their new plant at Wheeling, W. Va.

JAMES COOPER, Denver, Col., has bought the electric lighting plant at Glenwood, and will establish a steam heating plant.

HIPSKIND & HIPSKIND, Wabash, Ind., have the contract for installing the steam heating system in the factory of the Rockwell-Ruple Company in that city.

F. KNAPP has taken out a permit for building a plumbing shop at 64 Foote street, New Haven, Conn.

A CATALOGUE recently issued by Gorton & Lidgerwood, 96 Liberty street, New York, which is devoted to the Gorton Side Feed Boilers, will be of especial interest to those who install heating plants at the present time, owing to their being especially adapted to burn soft coal. The catalogue presents a broken view of the Boiler, showing the construction and operation; also full explanation of the details of dimensions, with prices. It also contains illustrations of the boiler connections in

a number of buildings in which the Gorton Boilers have been used, including a view of the Yale Club Building, New York, with a plan of the basement showing the arrangement of the piping system for supplying the heat to the indirect radiators used in the building. The catalogue also shows views of greenhouses in which Gorton Boilers have been used, and contains a number of testimonials, which in themselves give a great deal of information about these Boilers.

THE COLWELL LEAD COMPANY, 61 Centre street, New York, issue a little pamphlet devoted to Lead Cames and Glaziers' Solder. It also shows Pfeiffer's Automatic Benzine Soldering Iron.

THE VANDERMAN PLUMBING & HEATING COMPANY, Willimantic, Conn., have the contract for installing the heating and ventilating system in the new Normal School building in that city.

PATRICK J. DONOVAN of Rochester, N. Y., who was sued by the Master Plumbers' Association of that city, has appealed his case from the Municipal Court to the County Court.

A COLORED plumber of Savannah, Ga., was fined \$50 for doing unsanitary work. The court ordered \$25 of the fine to be remitted, providing the work was remodeled and done properly.

THE Department of Indian Affairs at Washington, D. C., will receive proposals until October 9 for a steam heating and electric lighting plant and a sewerage and plumbing system for the Indian School at Fort Totten, N. D.

THE Board of Health of Trenton, N. J., have taken action to secure conformance by the United States Government, which is erecting a post office building in that city, to the local plumbing regulations, which require that those who have plumbing work done shall file a plan of the proposed work.

"BUSINESS STEAM" is on the address page of a rather unique folder of green paper, printed in green ink, issued by the Thatcher Furnace Company, 240 Water street, New York, calling attention to the Empire, Comfort and Thatcher Steam and Hot Water Heaters. Wherever these folders are distributed they cannot but increase the interest of those who receive them in this method of heating buildings.

THE STEEL CLAD BATH & METAL COMPANY of Toronton, Ontario, are sending a little pamphlet to the plumbing trade, devoted to their Steel Clad Bathtubs and Combination Fixtures. Some of the Tubs are shown mounted on trucks so that they can be readily removed, and others are arranged with a wash basin for use in connection with them.

THE galvanizing department and warehouse of the Harrisburg Pipe & Pipe Bending Company, Harrisburg, Pa., were destroyed by fire September 20, entailing a loss of about \$25,000.

BAKER MFG. COMPANY, Evansville, Wis., have done a large business this year in Wind Mills, Pumps, Tanks and Feed Grinders, their sales for the first eight months exceeding those of any previous entire year in their history. Just now they are increasing their capacity by the erection of an additional building, which will be 90 x 140 feet.

THE STANDARD CARBOLITE LIGHTING COMPANY have bought about 100 acres near the village of La Salle, a suburb of Niagara Falls, and will there establish the Gas Generator factory and model town projected by the company. The Generator to be made by the company is for acetylene gas. The town to be established will be lighted by this gas and will have its individual conveniences of every form, in order that it may be a model for other places to follow.

THE WESTERN TUBE COMPANY, Kewanee, Ill., are making the Kewanee Combination Brass and Iron Ground Ball Joint Union. A circular illustrates the Union, the thread end of which is brass, the ring and bottom end being malleable iron, thus making the screw connection with different metals.



### New Firms and Changes.

THE POWELL-WOOD FILTER COMPANY have been chartered at Wheeling, W. Va., with a capital stock of \$50,000, to manufacture a patent Water Filter. The incorporators are William R. Powell, Charles P. Wood and W. W. Dermott.

THE LORAIN HEATING & MFG. COMPANY have been incorporated at Lorain, Ohio, with a capital stock of \$10,000, by A. Babcock, Jr., C. E. Krantz, F. C. Whitmore, J. S. Mead and S. W. Baughen.

CHARLES H. MORSE, who has been conducting a plumbing business at the south end of Gardiner, Maine, has closed his business and secured a position as chief plumber in the National Home.

THE SHIRLEY RADIATOR & FOUNDRY COMPANY, Shirley, Ind., have incorporated with a capital stock of \$50,000, for the manufacture of Steam and Hot Water Radiators and to do a general foundry business. They have a building, 75 x 250 feet, under construction and will erect another foundry the same size, making when completed a plant 75 x 500 feet. The plant is located in close proximity to the crossing of the Peoria & Eastern and the Cincinnati, Wabash & Michigan railroads, giving excellent shipping facilities to all parts of the country. The officers are: Robert Martindale, president and treasurer; Thomas J. Markey, vice-president and general manager, and W. W. Knight, secretary.

By authority from the Secretary of State of Illinois the American Tank & Fixture Company, Chicago, have changed their name to Acorn Brass Mfg. Company and increased their capital stock from \$50,000 to \$200,000. The company have acquired the property and good will of the Acorn Brass Works, assuming all indebtedness, and will continue the business of the constituent companies at 51 North Peoria street, Chicago. Since May 1 the Acorn Brass Works have been occupying much enlarged quarters on Fulton street, extending from Green to Peoria.

C. F. HAYDEN has purchased a half interest in the Plumbing, Sheet Metal working, Stove and Tinware business of A. D. Olmstead & Co., at Brewer, Maine. C. E. Jordan retires from the firm, and the business will be continued at the old stand in Penobscot square under the same firm name.

### TRADE NOTES.

THE PHOENIX AUTOMATIC FILTER COMPANY, Racine, Wis., are sending out an illustrated circular of 12 pages descriptive of their Tracy Oil Filter. Engravings are presented showing the operation of the Filter, together with a number of testimonials from users of this device. The Tracy Filter is made in six sizes, to hold from 5 gallons to two barrels of oil. It is claimed by the manufacturers to embody an absolutely complete process of oil filtration, and it is especially recommended on account of its large storage capacity, making a combined purifier and storage tank.

U. G. FLETCHER and others of Bellaire, Ohio, are organizing the Belmont Stamping & Enameling Company, with a capital stock of \$50,000. The location of the factory has not yet been decided.

THE CHATTANOOGA WASHING MACHINE & MFG. COMPANY of Chattanooga, Tenn., have been incorporated with a capital stock of \$28,000. The company are a consolidation of the interests of the Chattanooga Washing, Wringer & Machine Company and the Southern Single-tree Company. J. A. Willard is the general manager of the consolidated company.

THE PINE MOUNTAIN MICA & ASBESTOS COMPANY of Richmond, Ind., have been organized with a capital stock of \$1,000,000, for the development of Mica and Asbestos mines in Georgia and North Carolina.

THE RIMMON MFG. COMPANY, Seymour, Conn., manufacturers of Brass and other Metal Goods, are erecting a three-story addition, 38 x 60 feet, to their factory.

THE OHIO BRASS COMPANY of Mansfield, Ohio, are having plans and specifications prepared for a new machine shop, to be 56 x 336 feet and two stories high. Upon its completion their present machine shop will be

utilized as a wareroom. They are also building a large new warehouse and a new insulation building.

SCHEELER'S SONS, manufacturers of Wire Cloth, Artistic Metal Work and Wire Goods, Buffalo, N. Y., are now having plans drawn for a large addition to their factory. The building will be 50 feet wide by 100 feet long, and will have four stories and a basement.

THE PHOENIX GALVANIZING & MFG. COMPANY, at Pittsburgh, have bought a site of land, 123 x 160 feet, formerly occupied by Kane-Maloney Iron & Steel Company, and will erect a galvanizing plant on it. The present works of the concern are on Duquesne Way, Pittsburgh, but these will be abandoned when the new plant is finished.

THE BUCKLEY-HART MFG. COMPANY have filed articles of association at Detroit, Mich. The capital stock of the company is \$40,000. The company will manufacture and sell Brass, Iron and other Metal Specialties. The incorporators are as follows: Jas. P. Buckley, Richard P. Joy, Robt. W. Hart, Henry P. Hart and S. A. King.

THE MICHIGAN BARREL COMPANY of Grand Rapids, Mich., have issued a circular to the trade announcing that their factory is now running full and that their capacity for manufacturing Refrigerators is 2000 per month. They call attention to the difficulties which it has been necessary for them to overcome because of the losses they sustained by fire July 18, 1901, and the delay in rebuilding, owing to trouble in obtaining machinery and material for manufacturing, and even after the resumption of work in February of this year they found competent labor very scarce and exacting. Hence their inability to make prompt shipments during last season. They are now, however, in position to make early shipments on orders received for next season.

THE WROUGHT WASHER MFG. COMPANY, Milwaukee, Wis., have issued a catalogue of Wrought and Steel Plate Washers, which are manufactured in any thickness or any desired size.

THE D. M. STEWARD MFG. COMPANY, Chattanooga, Tenn., and 2 and 4 Stone street, New York, have issued an export catalogue and price-list relating to Slate Pencils, School and Metal Workers' Crayons, Lava Electric Insulators, Lava Gas Tips, Acetylene Burners, &c.

THE RICHMOND CEDAR WORKS, Richmond, Va., are distributing a catalogue relating to Washing Machines, which are shown in a number of different styles. They state that their Machines are all hooped with electric welded galvanized wire hoops, which are imbedded by a patented process into grooves in the tub, clamping the staves so tightly that it is impossible for them to fall off.

THE WHEELING STAMPING COMPANY, Wheeling, W. Va., have just issued their Catalogue No. 3, illustrating Lanterns, Lamp Burners, Screw Taps, &c. The company make metal specialties along these lines to order. The early pages of the catalogue are devoted to a new line of Lanterns, the special feature of which is the one-piece stamped tube, each side of the tube being drawn from one piece of tin, joined at the edge by a seam, no solder whatever being used.

F. E. MYERS & BRO., Ashland, Ohio, have just issued Catalogue No. 37, containing 352 pages. This illustrates with list prices the firm's extensive line of Pumps, Hay Tools, Door Hangers, &c. The catalogue, with the exception of half a dozen pages devoted to Pump Tools and Fittings, is devoted exclusively to goods of their production, including a number of new articles. The catalogue will be sent to all of the firm's customers, which they refer to as numbering over 10,000 in the United States, while they also have accounts covering 25 foreign countries. In view of the growing business increased facilities will be provided during the coming year.

The longest power transmission system in the world is that in and around San Francisco, Cal. Two-phase alternating current of 60 cycles is transmitted at an electromotive force of between 40,000 and 50,000 volts for a distance of 222 miles. The Bay Counties Electric Company have been in operation for some time trans-



mitting current from their power house at Colgate to Oakland, a distance of 152 miles.

## THE PRODUCTION OF NATURAL GAS IN 1901.

The annual report of the United States Geological Survey on the production of natural gas, recently completed by F. H. Oliphant, shows that the value of this product consumed in the United States in 1901 was \$27,067,500, representing approximately 169,172,000,000 cubic feet at 15 cents per 1000 feet. This is an increase in value over the product of 1900 of \$3,368,826. Although the consumption of natural gas steadily increases, the pressure, except in the new fields of West Virginia, has continued to decline, necessitating the expense of compression in order to market an increased production from the declining fields, which expense must continue to enhance as the pressure declines and the distance to the source of supply increases. There was an important increase in 1900 in the number of iron and steel works employing natural gas as fuel, the total having risen from 33 such establishments in 1900 to 102 in 1901, a large majority being located in Pennsylvania.

### CAPITAL STILL BEING ATTRACTED TO NATURAL GAS.

During the year 1901 there was an unusual amount of consolidation of the older companies marketing natural gas, and there were organized also a number of new companies with large capital, with a view, chiefly, of utilizing the great areas of high pressure gas territory in Lewis, Harrison, Marion and Wetzel counties of West Virginia by the construction of larger and longer pipe lines, so as to market this increased production in Western Pennsylvania and Ohio. This involves an outlay of many millions of capital.

As a source of heat, light and power, natural gas is unexcelled from the moment it reaches the surface of the earth at the mouth of the well until it reaches the furthest consumer at the end of the pipe line. No preparation is necessary for its combustion, and no residue is left. It needs only to be mixed with the proper amount of oxygen. These are the facts that have stimulated capitalists to invest the money necessary to develop the reservoirs of the natural gas fields that are still holding their original pressure and volume. These capitalists are building hundreds of miles of larger lines in order to supply the towns and cities formerly supplied by nearer but now exhausted fields, and also to supply other cities that have never known the blessings of natural gas.

It has been supplying the power for a very large number of factories and operations in the gas belt, and lately it has been extensively applied in creating the power by which the natural gas itself is compressed from a low to a high pressure when the original pressure has fallen and the pipes are insufficient to deliver the necessary quantity of gas at the well pressure. A number of these compressors work up very close to 1000 horsepower, with an economy that enables 8 to 10 cubic feet of natural gas to develop a horse-power for an hour, a saving of from 40 to 50 per cent. over high duty steam engines.

The State of West Virginia has for several years furnished an increasing quantity of natural gas to Pennsylvania and Ohio; yet there still remain under the domes and arches of its rugged hills great reservoirs of it that have only been sufficiently tested by the drill to prove their existence. These reservoirs are being connected by additional lines of large pipe and will shortly supply larger quantities to localities in these States that have exhausted their own nearer reservoirs and now turn to West Virginia for a continuation of their supply.

### COMPARISON OF VALUES.

The value of the natural gas sold in 1901 was greater than that of any previous year, though the quantity was greatly exceeded when it was first introduced extensively from about 1883 to the close of 1889. During this period of six years it was used in the most extravagant and reckless manner, and it was paid for at rates that were in many instances less than one-half the price of the equivalent coal. Large quantities were allowed to escape and burn from the mouths of hundreds of stand

pipes from Saturday afternoon until Monday morning. It is highly probable that in these six years of reckless consumption four times the present production was consumed annually.

As the visible supply grew less the value became more apparent, and the appliances for consuming the gas were greatly improved after the introduction of the meter. The pipe line companies adopted more advanced methods, in securing better joints, in shutting off wells that were not needed to keep up the pressure in the mains, and in manipulating the wells themselves. By the extension of lines into newer territory they have been enabled to market increasing quantities at enhanced prices since the years 1895 and 1896, in each of which years only \$13,000,000 worth of gas was sold.

The value of the natural gas consumed in the United States in 1901 was \$27,067,500, which, at 15 cents per 1000 cubic feet, is equivalent to 169,172,000,000 cubic feet. If it were possible to store this gas in a cube, the density throughout being equal, its sides would be 5530 feet in length or 250 feet greater than the sides of a cubic mile. If 20,000 cubic feet of natural gas be taken to equal 1 ton of coal, 8,458,600 tons of coal, valued at \$3.20 per ton, would be required to yield the sum of money for which the natural gas sold. The value of the production for 1901 was greater than that of 1900 by \$3,368,826, or over 14 per cent. It exceeded that of 1899 by \$6,992,627. It may also be interesting to note that the value of the 69,389,194 barrels of petroleum produced in the United States during 1901 was \$66,417,335, and that the value of the natural gas amounted to 40.7 per cent. of the value of the petroleum for the same year.

### STATISTICS.

There were 10,293 wells producing natural gas at the close of 1901, of which number 74 were not turned into the gas mains, and 2088 producing wells were drilled in the same year; there were 453 dry holes, or nonproducers, and 1084 were abandoned. In 1900 there were 9738 producing wells, of which number 24 were shut in; 1759 wells were drilled in the same year, 359 were dry holes and 991 were abandoned. There were very nearly 800 miles of pipe laid during 1901, the mains varying from 2 up to 20 inches. This brought the total up to 21,848 miles of natural gas mains of from 2 to 36 inches in diameter in use at the close of 1901.

The increase in the value of the output of natural gas in 1901 is due principally to increased production, the advance in the general price being very slight, and is not due so much to the output from the recently developed fields in Southwestern Pennsylvania and Central West Virginia as to the enlarging of lines and the installation of gas compressors. It is this that has kept up the quantity marketed in Indiana to about the average of former years, although the rock pressure has very largely decreased. Kansas, however, has increased the value of natural gas marketed both by developing new territory and by exploiting more thoroughly that which was already known. The following figures show the output of natural gas in 1901 by States: California, \$67,692; Colorado, \$1800; Illinois, \$1825; Indiana, \$6,954,566; Kansas, \$659,173; Kentucky, \$270,871; Missouri, \$1328; New York, \$293,232; Ohio, \$2,147,215; Pennsylvania, \$12,688,161; Texas, \$7255; South Dakota, \$20,000; West Virginia, \$3,954,472; total, \$27,067,500.

Notwithstanding all the care exercised in the collection and distribution of the statistics there is a very considerable amount of natural gas consumed of which no account is rendered, as it is used universally in the oil fields for pumping wells, both in the gas engine and under the boilers, for driving gas compressors, and for supplying farmhouses and many operators in the field. There are instances, which reach from northern Central New York to Eastern Illinois, where single wells supply one or two houses, so that if it were possible to secure a complete return of the value of all the fuel displaced the figures presented would be increased by at least 10 per cent.

A total of 5742 manufacturing establishments employed gas as fuel during 1901, of which 102 were iron and steel works, 219 glass works, and 5421 engaged in other industries.



## Stove and Hardware Dealers.

LAKE'S C. O. D. STORE, Greenville, Miss., have bought the business of the Mississippi Hardware Company of that city. The stock thus acquired has been added to their own, making an aggregate of \$40,000 to \$50,000 worth of goods. The Lake concern do both a wholesale and retail business, handling Stoves and Tinware, Shelf and Heavy Hardware, Agricultural Implements, &c. They request information in regard to discounts from any manufacturers in the above lines.

W. H. HANCY, dealer in Stoves, Tinware, Hardware, Farming Implements, Hay, Feed, Seeds, &c., Claremont, W. Va., has commenced the erection of a new store building, which will be 30 x 80 feet, two stories high, with cellar; also a warehouse, 16 x 24 feet.

THE STRACK HARDWARE COMPANY, Mount Vernon, Ind., have been incorporated, with a capital of \$7000, for the purpose of conducting the Stove, Tin, Hardware, Plumbing and Heating business, the incorporators being Frank Strack, Jacob M. Harlan, Leopold Rosenbaum, Louis H. Keck, Edward E. Highman and Brad-dock McGregor.

M. SNEDEKER is successor to Riley & Snedeker in the Stove, Hardware and Farming Implement business in Hatfield, Mo.

THE DILWORTH HARDWARE COMPANY, incorporated with a capital of \$10,000, have lately commenced business in Shawnee, O. T. Their line embraces both Shelf and Heavy Hardware, Stoves and Tinware, Sporting Goods, &c.

HAYRON BROS., dealers in Stoves, Tinware, Hardware, Agricultural Implements, Sporting Goods, &c., Jasper, Tenn., have sold their business to J. C. Kelly.

A. W. LEE has disposed of his Tinware, Hardware, Agricultural Implement and Sporting goods business in Cairo, Ga., to Sapp Hardware Company.

CHECOTAH HARDWARE COMPANY, Checotah, I. T., have incorporated with a capital stock of \$25,000. The company will conduct the wholesale and retail business in Stoves, Shelf Hardware, Tinware, Wagons, Buggies, Agricultural implements, Queensware, Harness, furniture, &c.

THE COUGHLIN HARDWARE COMPANY, recently incorporated with a capital of \$50,000, are successors to Coughlin-Martin Hardware Company, at Topeka, Kan., wholesale and retail dealers in Tinware, Stoves, Hardware and Miners' Supplies. T. J. Coughlin, president of the company, will manage the business.

JOHN R. COX, Stove, Hardware and Agricultural Implement merchant, Plattsmouth, Neb., has been succeeded by John Bauer.

THE G. A. PAULY HARDWARE COMPANY, St. Louis, Mo., have been incorporated with a capital stock of \$10,000 and will continue the retail business in Stoves, Shelf and Builders' Hardware, Paints, Glass, &c. The company are proprietors of two stores, one being located in the central part of the city and the other in the extreme west, and report business as very satisfactory during the past four years.

ELMER E. DEAL, Parker City, Ind., is erecting a two-story building for his retail Stove, Hardware and Tinware business.

R. B. QUIMBY has disposed of his Stove, Hardware and Tinware business in Wakefield, Neb., to K. E. Alexander, who continues at the old stand.

OREN STRATTON, Carthage, S. D., has sold his Stove, Tinware, Hardware, Sporting Goods and Harness business to James Shields and Wm. Cowell, who will continue under the style of Shields & Cowell.

THE BALTIMORE UTILIZATION COMPANY, Baltimore, Md., have been incorporated, with a capital of \$120,000, to deal in Household Goods.

THE KULENKAMPFF COMPANY have opened a fine showroom at 62 Centre street, New York, where they display Molds, Utensils and a complete line of Bakers' Supplies.

H. KADA, 33 Koikara-Suji, Kobe, Japan, dealer in Household Goods, Hardware, Tools, Cutlery, &c., advises

us that he would be pleased to receive from manufacturers of Tinware, Wire Goods, &c., for household and culinary purposes copies of their latest catalogues and price-lists.

GRIMES & EPTING are successors to Grimes & Watrous in the Stove, Tinware, Hardware, Farming Implement, Sporting Goods and Seed business in Burlington, Kan. They have erected a new warehouse of brick and stone, 25 x 80 feet, two stories, and will also erect a new store building, 35 x 105 feet, two stories, likewise of brick and stone, with plate glass front. They have purchased the lot on which the new building will stand and already have some of the material on the ground.

PETTY & SNYDER have purchased the Stove, Hardware, Tinware, Agricultural Implement, Sporting Goods, Wagon, Buggy, Harness and Paint business of H. O. Alspaugh in Cowgill, Mo.

CODDINGTON & BAUMAN have bought the Hackett Stove and Hardware establishment in Tuscola, Ill.

W. A. BARRY is successor to Barry Bros. in the Stove, Hardware and Tinware business in Downs, Kan.

W. P. & T. O. BROWN have succeeded D. B. Ashbrook in the Stove, Hardware, Farming Implement and Sporting Goods business in McFall, Mo.

W. E. PARKS has purchased the Stove, Hardware and Tinware business of Holman Bros., Marceline, Mo.

F. M. GARDNER & Co., dealers in Stoves, Hardware, Tinware, Sporting Goods, &c., Hawarden, Iowa, have been succeeded by F. F. Chladek, formerly of Tabor, S. D.

WILD BROS., Evergreen, Ala., have been succeeded by Wild-Jackson-Beaven Hardware Company, who will continue the wholesale and retail business in Stoves, Tinware, Hardware, Sporting Goods, Farm Implements, &c.

JOE MICHEL has commenced the Stove, Hardware, Farming Implement, Sporting Goods and Plumbing Supply business in Spokane, Wash. Mr. Michel is erecting a new store, which will be of brick, 35 x 110 feet in dimensions, three stories high. Its completion is expected by January 1 next.

J. C. TURNER, dealer in Stoves, Hardware, Agricultural Implements, Sporting Goods, &c., Sterling, Kan., has sold out to Houston Bros.

THE Retail Dealers' Hardware and Implement Association of Texas will hold its annual convention at Dallas, October 8, 9 and 10. The Dallas fair will be in progress at that time and the fair managers have agreed to set October 8 as Hardware and Implement men's day.

WILBUR CLARK has removed his stock of Stoves, Tinware, Hardware, &c., to a new block in Imperial, Cal., which is located in the middle of what used to be called the Colorado desert and is 70 feet below sea level. Mr. Clark's store is the first Hardware emporium in the former desert.

SIMPSON HARDWARE COMPANY, capital \$25,000, have been organized at Williamsport, N. C., by J. Paul Simpson, George W. Newell and others. They will do both a wholesale and retail business, handling Stoves, Tinware, Shelf Hardware, Agricultural Implements and Sporting Goods. They are starting in with a \$5000 stock.

J. A. BOIES & Co., have disposed of their Stove, Hardware and Sporting Goods business at Woodbine, Iowa, to Nickel & McEwen.

WESSELINK & BOEYINK have succeeded Sneller & Wesselink in the Stove and Hardware business in Sioux Center, Iowa.

DOWLING & GRANTHAM have succeeded Bressler & Hurst in the Stove, Hardware and Agricultural Implement business in Gentry, Mo.

MILROY & JOHNSON have succeeded G. W. Collins in the Stove, Hardware and Agricultural Implement business in Hopkinton, Iowa.

CARLSON BROS. have sold their Stove, Hardware and Farming Implement business in Lake Preston, S. D., to Olston & Thorsnes, who will take possession December 1 next. Mr. Olston has been identified with the sale of Farm Implements for several years past.



### The Dewees Wood Sheet Mills.

Some important improvements and extensions are being carried out at the W. Dewees Wood plant of the American Sheet Steel Company at McKeesport, Pa. These include the erection of a new iron building to take the place of the old frame building which has sheltered the mills for many years past and which was condemned as unfit some time ago. Additional ground has been acquired by the American Sheet Steel Company near the mill, on which new departments are to be erected. Three new sheet mills—two 36-inch and one

### The New Vieillard & Osswald Inclinable Press.

The new inclinable automatic press built by Vieillard & Osswald of Brooklyn is provided with a dial feed and a positive safety clutch attachment. The latter is introduced in order to guard the dies against accident. It is so designed that if, for one cause or another, the dial does not properly align the press will be automatically stopped before any injury has been done.

The operation of the device will be understood from the sketch, Fig. 2. If the dial is not in proper position the rod A will fail to enter its appropriate hole. This

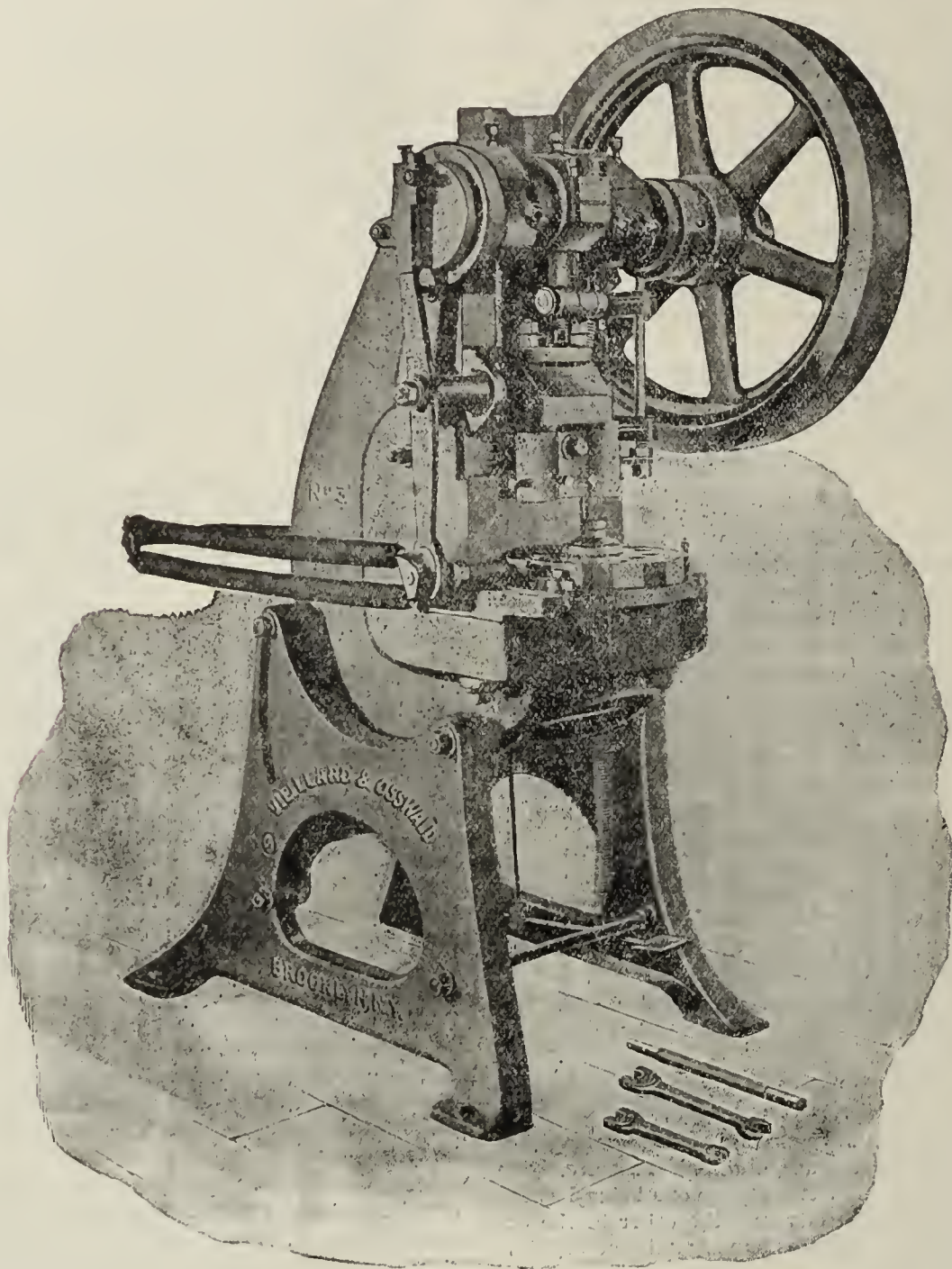


Fig. 1.—The New Vieillard & Osswald Inclinable Press

40-inch—will be completed by the end of October, which will give the Wood plant a total of 16 sheet mills. All of the old mills are to be modernized, and the entire plant will be made one of the best sheet mills in the country. At the time of the strike last year the American Sheet Steel Company announced their intention of dismantling the Wood plant and transferring the mills to Vandergrift, Pa., owing to the strong spirit of disaffection which manifested itself among the workmen at McKeesport. This decision, however, was subsequently reversed and the mill was reopened. A number of improvements have been made in the plant during the past 12 months.

THE AMERICAN CAN COMPANY are erecting in Chicago a machine and blacksmith shop, 97 x 297 feet, and three stories in height.

will cause the rod D, which is carried by the same plate as the rod A, to remain in the path of the stud on the collar C and stop the rotation of the latter. This collar engages with the clutch which controls the movement of the machine.

This type of press is made in seven sizes, ranging from 500 to 5500 pounds, and is intended for shell work, such as lamps, buttons, ferrules, &c.

J. RIGNEY, P. O. Box 76, Montreal, Canada, advises us that he has been appointed Canadian representative of Hughes, Chemery & Co., Iron, Tin Plate and Metal merchants, of 54 Billiter Buildings, Billiter street, London, England, and 24 Rue Cadet, Paris, France. Hughes Chemery & Co. are the largest English exporters of Black Plate, Tin Plate and Galvanized and Black Sheet Iron to the Continent of Europe, supplying the leading



works in Germany, Holland, Switzerland, Austria-Hungary, Italy, Spain, Belgium and France. They have a factory in the last named country.

### A Useful Booklet for Roofers.

One of the most attractive pieces of advertising literature that has reached us for a long time is a pamphlet of 44 pages which is being distributed by the American Tin Plate Company with the object of impressing upon the building and roofing trades the merits of terne plates for roofing material, and especially the advantages of the M F and U. S. Eagle roofing plates, for which W. C. Cronmeyer, 1211 Carnegie Building, Pittsburgh, Pa., is the company's agent. The get up of the publication is of the highest character in regard alike to typography, illustrations and subject matter. The front cover bears a picture of a workman carrying a solder furnace and some sheets of M F tin, the outer one being an actual piece of terne plate stamped with the M F brand and carried under the man's arm in such a way that it can be slipped out for inspection. The pamphlet, which is entitled "A Fifty Year Roof, How It Is Made," contains a considerable amount of details regarding the history

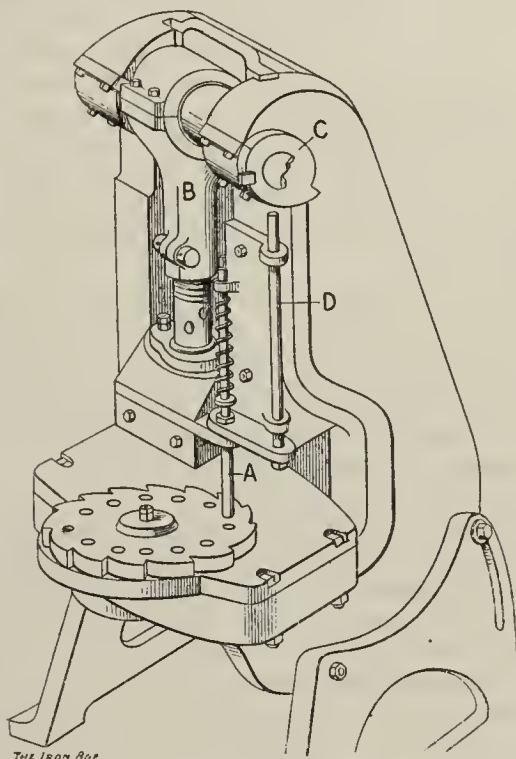


Fig. 2.—Safety Clutch.

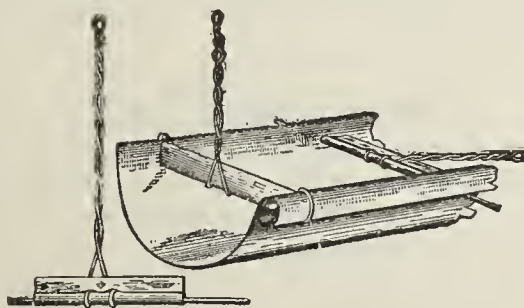
and manufacture of tin and terne plates, together with much useful technical information bearing upon the same subject. It is profusely illustrated with half-tone and line engravings showing the processes of the manufacture of iron and of tin plate and the application of tin plate to a roof, together with views of a number of the American Tin Plate Company's steel and tin plate works. Pictures are also presented of several important buildings the roofs of which are covered with M F tin. The latter portion of the pamphlet is devoted to various useful tables showing the quantity of tin required to cover a given number of square feet of flat seam roofing and standard seam roofing, the United States gauge and weights of steel sheets, net weight per box of tin plates, standard weights and gauges of tin plates, weights and specific gravity of different kinds of metal, fusibility and heat conducting power of the various metals, approximate weight of materials for roofs, wind pressures on roofs, number of slates required per square for roofs, and a large amount of other useful information regarding not only roofs but building materials of all kinds. This little work should prove valuable to all engaged in the roofing and building trades.

With the announcement that they are roofers "on bright days and dark days and on all days," Gara, McGinley & Co., 23 South Seventeenth street, Philadelphia, Pa., are sending out, in conjunction with their fall cir-

culars, a "color barometer," consisting of a card bearing the figure of a little girl wearing a dress the hue of which changes with the weather, being blue in fair weather, pink in stormy and violet in changeable weather. It is a pretty notion that should add to the popularity of the donors.

### The Horan Stay Gutter Hanger.

The Horan Stay Hanger Company, 1851 Portland avenue, Louisville, Ky., are manufacturing the patent Horan stay gutter hanger, of which illustrations are given herewith. One of the special features of this hanger is a hinge movement, which enables the adjustment of the hanger at the shop. The eave trough can then be partially nested for transportation, the hanging wire being turned down into the gutter, as shown in



The Horan Stay Gutter Hanger.—Fig. 1.—Views of Hanger and of Same Applied to Gutter.

Fig. 1. This leaves nothing to be done at the building but to drive the nails. The use of this hanger also enables the roofer to make joints in the beads of the gutter with the hanger adjusted, without catching under the eave of the roof as the gutter is turned up into position. Another strong point claimed for the hanger is that the stay wire, being adjustable, will hang single or double bead gutters, box gutters, octagon gutters, O. G. gutters, fancy cornice, or any kind of hanging eave trough. The advantage in connection with this feature of the device is that the jobbers by the use of the company's product need carry but one line of goods, and yet be in position to supply all the demands of their customers in this line, instead of, as now, being compelled to carry a stock of single bead hangers for those who are putting up single bead gutters, double bead hangers for those using double bead gutters and steel hangers for those using box or O.

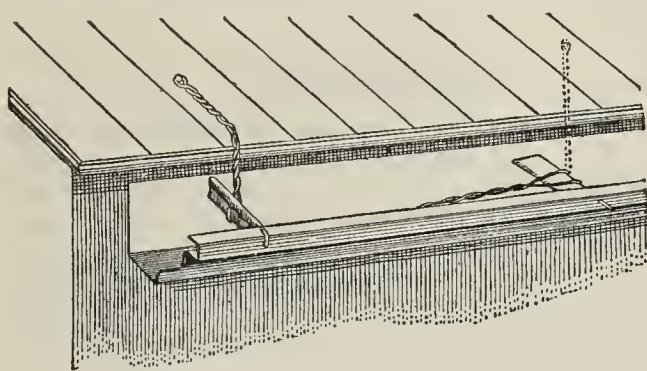


Fig. 2.—View of Hanger in Place on Roof.

G. gutters, necessitating an outlay in three different lines, in order to have a complete stock. The Horan stay gutter hanger will cover all of the wants above referred to. The advantage, to the jobber especially, is obvious from an economical point of view. The hanger is formed of galvanized iron and galvanized wire, and it is said will not sag from weight, nor permit the gutter to spring from the drain line. Moreover, the galvanized iron stay, shown in Fig. 1, prevents the gutter from collapsing. In Fig. 2 are shown the gutter and hanger in position on the roof, indicating the method of application. The manufacturers claim that this is the most readily adjusted hanger on the market, and that it makes an exceptionally neat and substantial job. The hangers are made in nine sizes—namely, 3, 3½, 4, 4½, 5, 6, 7, 8 and 10 inches.



### THE TIN PLATE SITUATION.

A conference has been arranged between the Tin Plate Wage Committee of the Amalgamated Association and the American Tin Plate Company, to be held in New York on Monday, September 29. At this meeting the vote of the lodges on the matter of accepting a reduction when working on tin plate for export will be definitely known. The first vote of the lodges taken some time ago was almost unanimously against accepting the proposition, but owing to the appeals of President Schaffer and other officials of the Amalgamated Association, together with other influences that were brought to bear, many of the lodges that voted at first against the reduction have since voted in favor of accepting it, and it now looks as though enough lodges will vote in favor of the proposition to carry it. The American Tin Plate Company will be represented at the conference by Warner Leeds and the various district managers.

### A Severe Spinning Test.

We illustrate herewith a design spun by the National Stamping Works of Chicago from one piece of No. 22 gauge Ryerson's extra deep stamping and spinning steel furnished by Joseph T. Ryerson & Son, Chicago. The steel used for this work was not annealed. This piece of work stands about 12 inches high, and is 10



*A Severe Spinning Test.*

inches across the largest diameter. President Frank Kohlhasse of the National Stamping Works says that in all his experience he had never seen a steel sheet that would stand this difficult test; that, in fact, the material seemed to work fully as easily as brass. This is a gratifying testimony to the quality of the Ryerson material.

### FLASHINGS.

A REPORT current on the New York Stock Exchange to the effect that the United States Steel Corporation have acquired 60 per cent. of the stock of the American Can Company has received an unqualified denial from the officials of the Steel Corporation.

THE C. W. HUNT COMPANY, Pittsburgh, Pa., have been awarded a contract by the American Sheet Steel Company to install a complete coal handling plant in the new boiler plant which the company are building at Leechburg, Pa.

HOLBROOK & Co., with principal office at 45 Montgomery street, Jersey City, N. J., have been incorporated with a capital stock of \$100,000 by Joseph L. Rusling, Giles J. Holbrook and Arthur M. Holbrook, to manufacture Roofing Materials.

THE STANDARD TIN PLATE COMPANY of Canonsburg, Pa., have been incorporated with a capital stock of \$300,000, for the purpose of erecting Tin Plate works. S. A. Taylor, I. R. Mason, Jr., and W. I. Berryman are the directors.

THE buildings for the new plant of the Marietta Sheet & Tin Plate Company, Marietta, Ohio, have been completed and the work of erecting the mills is now being carried on. The entire plant will not be in condition for complete operation for some months to come.

GARA, MCGINLEY & Co, 23 South Seventeenth street, Philadelphia, Pa., call attention, by means of a leaflet,

to the fact that they are equipped to do all kinds of Architectural Sheet Metal work, as well as roofing. Among the notable buildings in Philadelphia on which the firm have done the sheet metal work are the Fidelity Fire Assurance Building, the Philadelphia Bourse, the Pennsylvania Railroad Company's train shed, the Hotel Lafayette and the Betz and Drexel buildings, also the Union Terminal Station at St. Louis, Mo.

THE Tin Plate plant of the N. & G. Taylor Company at Cumberland, Md., which was recently closed down on account of a strike of the annealers, picklers and openers, is reported as likely to remain idle for some little time.

THE McILROY-JENNINGS CORNICE WORKS of Chicago, Ill., have been incorporated with a capital of \$6000 by M. L. Jennings and J. M. McIlroy. The company will engage in the manufacture of Sheet Metal Cornices.

THE MILWAUKEE CORRUGATING COMPANY, Milwaukee, Wis., have furnished us with specimens of the attractive advertising matter which they are sending out in the interests of Kuehn's Patent Rain Water Cut Off, the Eclipse Wire Eave Trough Hanger and the Adjustable Steel Eaves Trough Hanger. A circular refers to Steel Ceiling Sheets, painted and galvanized, and furnished either plain, headed or corrugated; also Curved Corrugated Sheets for roofs and ceilings, awnings or architectural purposes. These Sheets are supplied either red painted, graphite painted or galvanized. The Milwaukee Corrugating Company, although new in the trade, possess the advantage of experienced management, thoroughly familiar with all the requirements in their line. Their factory being new, it is equipped with strictly modern machinery capable of producing the high quality of work now demanded.

SHIPMENTS of Tin Plates from Great Britain to the United States in the month of August, according to the British Board of Trade returns, amounted to 5011 tons, a decrease of 3500 tons from the figures for August, 1901. The total shipments of Tin Plates from British ports to this country in the eight months ended August 31, 1902, amounted to 46,156 tons, as compared with 41,369 tons in the corresponding months of 1901.

THOSE who are desirous of qualifying themselves in cutting patterns will be interested in the proposition of the Home Industrial School, Canton, Ohio, to give three lessons free, in order that students may acquaint themselves with their method of teaching, which includes instruction on some 500 problems.

THE LEWIS ROOFING COMPANY have decided to establish a factory for the manufacture of Fire Proofing in the west end of Rock Island, Ill. A new company have been incorporated, with E. W. Lewis, president; F. J. Lewis, vice-president, and J. L. Hagman, secretary. The product of the plant will, we understand, consist of Cement Tile for exterior work and Asbestos for interior fire proofing. The material is formed in molds and is dried by evaporation. It is also stated that the company will move their plant from Moline to Chicago after the lease of the ground now occupied by their plant expires.

THE JOHN SCHWING COMPANY, Bridgeport, Conn., are making the Metal Cornices for the new High School at Danbury and for the new Rowe Building in New Milford.

THE Sheet Metal worker, who is always interested in the problem of cutting the patterns for Elbows, Pipe and Miters and similar work in Sheet Metal, will be attracted by the proposition of J. M. McFarland, 718 North Grand avenue, Los Angeles, Cal., who is offering a Protractor Pattern designed to assist in this work.

THE UNIVERSAL MACHINE WORKS, Cleveland, Ohio, are distributing a large size postal card calling attention to their Patent Universal Power Pipe Tapering Machine for swedging or drawing in the ends of corrugated pipe. The machine is illustrated and described on the card.

THE six-mill Sheet plant of the Laughlin Nail Company, at Martin's Ferry, Ohio, is being operated to full capacity. In one day recently their Bar mill turned out 75 tons, the largest day's output in the history of the plant.



WHAT is said to be the largest block of Slate taken out of any quarry in the valley was hoisted at Howell's quarry, Bangor, Pa., on July 25. From it was made five squares and 43 feet of Roofing Slate. Two squares and 94 feet were made into 12 x 24, 127 feet into 18s, 20s and 22s, the balance being made up in smaller sizes.

A NUMBER of improvements are being made at the Struthers works of the American Sheet Steel Company, at Struthers, Ohio.

As the result of the abandonment of the Irondale, Ohio, Tin Plate mills of the American Tin Plate Company some months ago, it is stated that that city is soon to have a new two-mill Tin Plate plant. The withdrawal of the first mentioned concern has so affected the business of the town that the leading merchants have subscribed to a new company, to be known as the Irondale Tin & Sheet Mill. The company will shortly be incorporated, and will locate in the old Furnace Hall plant, which includes 80 acres of land and a large building.

THE PITTSBURGH WORKS of the American Tin Plate company at New Kensington, Pa., have been shut down for an indefinite period.

THE ALLEGHENY STEEL & IRON COMPANY of Pittsburgh, with Sheet mills at Tarentum, Pa., have bought from Wickes Brothers of Pittsburgh a vertical water tube boiler of 350 horse-power.

GEORGE CALLAHAN & Co., 218 Front street, New York, have been supplying the United States Government with their Rubber Roof Cement, used in connection with the fortifications on the New Jersey Coast, and refer to it as having given excellent results. They have now received large additional orders for the Sandy Hook, Willet's Point and West Point Government works, now in course of construction. This concern also manufacture a Steam Joint Cement.

THE ENAMEL STEEL TILE COMPANY of Bellaire, Ohio, are nearing completion of their plant. The factory and equipment will be modern in every detail, and the company state that a high class of Enamel Steel Tile will be offered in a few weeks. This Tile will be made in the various sizes, colors and designs, requires no repainting, and will not fade or craze. The officers of the company are as follows: J. F. Du Bois, president; W. H. Landkrohn, manager; J. W. Garber, secretary and treasurer.

PROSPERITY LODGE of the Amalgamated Association, composed of employees of the La Belle Works of the American Tin Plate Company of Wheeling, W. Va., have voted in favor of accepting a reduction of wages when working on Tin Plate for export. A former vote of this lodge was against this proposition.

THE U. T. HUNGERFORD BRASS & COPPER COMPANY, 497-503 Pearl street, New York, have opened a branch office at 510 Arch street, Philadelphia, in charge of three of their most competent people who thoroughly understand the Brass and Copper business, for the purpose of increasing their sales in Philadelphia and surrounding territory. No stock will be carried at that point, but as they continually have on hand at their new headquarters in New York a well assorted stock of about 1,000,000 pounds, shipments of which can be delivered in Philadelphia and nearby points within 24 hours after receipt of order, they do not believe it will be necessary to carry a stock there.

A rather good, or bad, story is told by a writer in *Cassier's Magazine*, illustrating the remarkable methods of the executives of some of the trades unions in dealing with their members. It appears that while a workman was engaged in guiding a cable into a conduit in a building that was being wired his fingers were caught between the cable and the walls of the conduit. The men at the far end of the conduit, unaware of their comrade's plight, continued to pull upon the cable, seeing which an apprentice lad ran to his assistance and pulled back the cable. A delegate of the union who had witnessed the affair and had expressed sympathy for the sufferer reported him for violation of the rules of the order, and the latter was called to executive headquarters to explain his conduct. Notwithstanding that his fingers bore evidence to the ex-

tent of the accident he had undergone, he was fined "for allowing an apprentice to do helper's work—to wit, assisting a journeyman drawing wire into conduits."

### United States Patents.

The report of the Commissioner of Patents for the year 1901 shows total receipts of \$1,449,398 and expenditures of \$1,297,385, leaving a balance of \$152,012, which goes to a surplus fund already amounting to \$5,177,458. At least one department of the Government is self supporting. The total number of applications requiring investigation was 52,912, and the total number of patents issued was 27,292, so that nearly 50 per cent. of the applications were rejected. According to the statistics Connecticut leads in inventive genius, having obtained one patent to every 1198 inhabitants. Then comes District of Columbia with 1296; Massachusetts is next with 1472, and then New Jersey with 1572. North Carolina and Mississippi require over 18,000 citizens to think up one invention, while in South Carolina the number is over 28,000, and in Alaska over 31,000. Of foreign countries Germany comes first, as 1045 of her people took advantage of our patent laws. England is next with 986, then Canada 376, France 306 and Austria 156.

### New Publication.

**The Manual of Business.** Compiled by Sidney P. Johnston. Size, 5 x 8 inches; 264 pages. Published by Daniel Stern, 69 Dearborn street, Chicago, Ill.

This volume, which has just been issued as an addition to the series of *American Artisan* manuals, contains a collection of correct business forms for executing all commercial instruments, commercial data and advice on the thousand and one questions which constantly arise in everyday business life. The contents have been compiled from various sources and cover a wide field, as will be seen by the headings of the various chapters, which are as follows: Penmanship and commercial correspondence, bookkeeping, debts and collections, bank and commercial papers, contracts, notes, patents, measurements, public roads, postal regulations, discount and interest, property, real and personal, transportation, rights of clearance, parliamentary rules and forms of resolutions, dictionary of business terms, business abbreviations and business maxims. The book is intended to be a ready reference work bearing on forms of business usage and will doubtless find a useful place on the desks of many business men.

### The Dandy Electric Carpet and Clothes Whip.

The carpet and clothes whip illustrated herewith is made of rattan reeds  $\frac{1}{2}$  inch in diameter, rendering it



*The Dandy Electric Carpet and Clothes Whip.*

light and durable. It is put on the market by the Theo. J. Ely Mfg. Company, Girard, Pa.

The American Foundrymen's Association have issued as a souvenir of their seventh annual convention a cloth bound volume containing a report of the proceedings at the Boston meeting on June 17 to 19, 1902. The volume contains all the papers presented at the convention, a stenographic report of the discussions and action on resolutions, numerous illustrations of points of interest in Boston and photographic reproductions of interesting occurrences which took place during the excursions of the association to various points in Boston and vicinity. The volume has been prepared by the secretary, Dr. Richard Moldenke, P. O. Box 432, New York City.



# THE LETTER BOX.

*Inquiries in regard to practical questions of general interest are invited, in reply to which we shall be glad to receive suggestions and information from our readers.*

*Correspondents are requested in all cases to give their names and addresses, which will not, however, be published or disclosed without their consent.*

## WANTS HELP TO HEAT A SCHOOL.

From C. A. S., New York.—I have prepared the following for the assistance of "C. S.," whose inquiry about heating a school appears in *The Metal Worker* of July 26:

I assume that the school building should hold about 800 pupils, that 30 cubic feet of air should be allowed for each person and that each classroom should hold about 67 persons; also that the alteration has been designed to be made at a small cost. In figuring this job I have used the rules for a hot water heating job, calculating to get 175 B. T. U. from radiator, with the water at 180 degrees. As 15,594 square feet of radiation would be required for the job, using 7 pounds of coal to each square foot of grate surface, and using indirect, we have to add 50 per cent. more, amounting to 23,385 feet, and one-third more for piping, making a total of 31,326 ÷ 395 = 78 square feet of grate surface. But, taking the same as 1800 B. T. U. for each heating surface, shows that 3034.2 square feet of heating surface are required, or 38.9 square feet to grate surface of 1 square foot and 395 ÷ 38.9 = about 10.2, and 144 ÷ 38.9 = about 3.7.

There is 15,594 square feet of radiation; but as it is a furnace job, not hot water, 15,594 ÷ 10.2 = 1529 square feet of heating surface required in the furnace, and 1529 × 3.7 = 5657 square inches of grate surface. Using 7 pounds of coal to 1 square foot of grate, this will only heat 35 degrees in warm air heating, and twice this amount will be required to heat to 70 degrees standard. If, instead, 14 pounds are used to 1 square foot of grate surface twice the heat will be generated, or using 7 pounds all the way through 1529 × 2 = 3058 square feet of heating surface in a hot water boiler or grate surface equal to about 78 square feet.

In looking the market over we find there is a firm that make warm air furnaces, and if "C. S." will use eight of their apparatus, having each 191 square feet of heating surface, or a total of 1528 square feet, and grate surface of 5656 square inches and about 1300 square inches of warm air flue to each, he will have 10,400 square inches, and only 10,190 square inches is required. On the plan of the school building in the article of July 26 four ventilation flues are proposed, which is not a bad idea. But there are no chimneys for the furnaces, so the only way is to run the smoke up the center chimney and the heat from the pipe will save on the coal bill. So much is said about how stack heaters are poorly managed by those having them in charge. They should be supervised so that their work will be done properly. There are four ventilating flues, about 10 square feet each. The best average velocity that can be allowed is about 600 feet per minute, and 6030 cubic feet per minute must be carried away for the three classrooms; 6030 ÷ 600 = 10.5 square feet; 10.5 × 4 = 42 square feet for the area of the shaft. The building being about 60 feet from cellar to outlet of vent flue, and, say, 8 feet off for cellar, gives 52 feet of vent flue;  $\sqrt{52}$  = about 7.3, and 42 ÷ 7.3 = 5.75<sup>2</sup> = 33 degrees.

By using stack heaters burning 7 pounds of coal per square foot of grate and four of the warm air heaters and having them so arranged as to take air from the floor after school hours and from halls when below freezing point, and taking air from the classrooms on the first floor when above 35 degrees, and the apparatus so arranged as to be able to throw all the heat from the same to either the vent flue or the room, as desired, when below freezing point, there should be no failure to heat. As there are 70 square feet I have provided 56 square feet on front entrance. All air is to be taken from above the roof line and where it is proper, and under the impression that water heaters can

| Floor.       | Room.                    | Square feet of glass and exposure in apartments. |       |       |       | Square feet of exposed wall and its exposure in apartments. |       |       |       | Total glass. Sq. ft. | Square feet of exposed wall and its exposure in apartments. |       |       |       | Total wall. Sq. ft. | 1/2 of wall of glass. Sq. ft. | S' × 0.4 + 1.52 s. Sq. ft. | 0.4 × exposed radiation. Sq. ft. | 12 p. c. added over 10 ft. radiation. Sq. ft. | Total radiation changes. Sq. ft. | Total Sq. ft. | Size of warm air pipes, inches. | Number of pipes to room. | Area in sq. in. of pipes. | Vent flue register. 20 x 24 20 x 24 24 x 24 24 x 30 |
|--------------|--------------------------|--------------------------------------------------|-------|-------|-------|-------------------------------------------------------------|-------|-------|-------|----------------------|-------------------------------------------------------------|-------|-------|-------|---------------------|-------------------------------|----------------------------|----------------------------------|-----------------------------------------------|----------------------------------|---------------|---------------------------------|--------------------------|---------------------------|-----------------------------------------------------|
|              |                          | N.                                               | S.    | E.    | W.    | N.                                                          | S.    | E.    | W.    |                      | N.                                                          | S.    | E.    | W.    |                     |                               |                            |                                  |                                               |                                  |               |                                 |                          |                           |                                                     |
| 1            | 26 x 40 x 16 feet, N. E. | 588                                              | 588   | 391   | 391   | 588                                                         | 588   | 391   | 391   | 87.5                 | 588                                                         | 588   | 391   | 391   | 979                 | 245                           | 67.6                       | 98                               | 19.9                                          | 1,005                            | 1,190.5       | 20 x 26                         | 2                        | 965                       | 20 x 24                                             |
| 2            | 26 x 40 x 16 feet, N. E. | 588                                              | 588   | 391   | 391   | 588                                                         | 588   | 391   | 391   | 87.5                 | 588                                                         | 588   | 391   | 391   | 979                 | 245                           | 67.6                       | 98                               | 19.9                                          | 1,005                            | 1,190.5       | 20 x 26                         | 2                        | 965                       | 20 x 24                                             |
| 3            | 26 x 40 x 16 feet, N. E. | 588                                              | 588   | 391   | 391   | 588                                                         | 588   | 391   | 391   | 87.5                 | 588                                                         | 588   | 391   | 391   | 979                 | 245                           | 67.6                       | 98                               | 19.9                                          | 1,005                            | 1,190.5       | 20 x 26                         | 2                        | 965                       | 20 x 24                                             |
| Totals       |                          | 1,764                                            | 1,764 | 1,173 | 1,173 | 1,764                                                       | 1,764 | 1,173 | 1,173 | 262.5                | 1,764                                                       | 1,764 | 1,173 | 1,173 | 2,937               | 735                           | 202.8                      | 294                              | 59.7                                          | 3,015                            | 3,571.5       | 40 x 60                         | ..                       | 2,332                     | .....                                               |
| 1            | 28 x 40 x 16 feet, N. W. | 588                                              | 588   | 413   | 413   | 588                                                         | 588   | 413   | 413   | 87.5                 | 588                                                         | 588   | 413   | 413   | 1,001               | 250.3                         | 67.6                       | 100.12                           | 20.2                                          | 1,005                            | 1,192.9       | 20 x 26                         | 2                        | 965                       | 20 x 24                                             |
| 2            | 28 x 40 x 16 feet, N. W. | 588                                              | 588   | 413   | 413   | 588                                                         | 588   | 413   | 413   | 87.5                 | 588                                                         | 588   | 413   | 413   | 1,001               | 250.3                         | 67.6                       | 100.12                           | 20.2                                          | 1,005                            | 1,192.9       | 20 x 26                         | 2                        | 965                       | 20 x 24                                             |
| 3            | 28 x 40 x 16 feet, N. W. | 588                                              | 588   | 413   | 413   | 588                                                         | 588   | 413   | 413   | 87.5                 | 588                                                         | 588   | 413   | 413   | 1,001               | 250.3                         | 67.6                       | 100.12                           | 20.2                                          | 1,005                            | 1,192.9       | 20 x 26                         | 2                        | 965                       | 20 x 24                                             |
| Totals       |                          | 1,764                                            | 1,764 | 1,239 | 1,239 | 1,764                                                       | 1,764 | 1,239 | 1,239 | 262.5                | 1,764                                                       | 1,764 | 1,239 | 1,239 | 3,003               | 751                           | 202.8                      | 300.4                            | 60.6                                          | 3,015                            | 3,578.7       | 40 x 60                         | ..                       | 2,332                     | .....                                               |
| 1            | 28 x 40 x 16 feet, S. W. | 588                                              | 588   | 413   | 413   | 588                                                         | 588   | 413   | 413   | 87.5                 | 588                                                         | 588   | 413   | 413   | 1,001               | 250.3                         | 67.6                       | 100.12                           | 20.2                                          | 1,005                            | 1,192.9       | 20 x 26                         | 2                        | 965                       | 20 x 24                                             |
| 2            | 28 x 40 x 16 feet, S. W. | 588                                              | 588   | 413   | 413   | 588                                                         | 588   | 413   | 413   | 87.5                 | 588                                                         | 588   | 413   | 413   | 1,001               | 250.3                         | 67.6                       | 100.12                           | 20.2                                          | 1,005                            | 1,192.9       | 20 x 26                         | 2                        | 965                       | 20 x 24                                             |
| 3            | 28 x 40 x 16 feet, S. W. | 588                                              | 588   | 413   | 413   | 588                                                         | 588   | 413   | 413   | 87.5                 | 588                                                         | 588   | 413   | 413   | 1,001               | 250.3                         | 67.6                       | 100.12                           | 20.2                                          | 1,005                            | 1,192.9       | 20 x 26                         | 2                        | 965                       | 20 x 24                                             |
| Totals       |                          | 1,764                                            | 1,764 | 1,239 | 1,239 | 1,764                                                       | 1,764 | 1,239 | 1,239 | 262.5                | 1,764                                                       | 1,764 | 1,239 | 1,239 | 3,003               | 751                           | 202.8                      | 300.4                            | 60.6                                          | 3,015                            | 3,578.7       | 40 x 60                         | ..                       | 2,332                     | .....                                               |
| 1            | 26 x 40 x 16 feet, S. E. | 588                                              | 588   | 391   | 391   | 588                                                         | 588   | 391   | 391   | 87.5                 | 588                                                         | 588   | 391   | 391   | 979                 | 245                           | 67.6                       | 98                               | 19.9                                          | 1,005                            | 1,190.5       | 20 x 26                         | 2                        | 965                       | 20 x 24                                             |
| 2            | 26 x 40 x 16 feet, S. E. | 588                                              | 588   | 391   | 391   | 588                                                         | 588   | 391   | 391   | 87.5                 | 588                                                         | 588   | 391   | 391   | 979                 | 245                           | 67.6                       | 98                               | 19.9                                          | 1,005                            | 1,190.5       | 20 x 26                         | 2                        | 965                       | 20 x 24                                             |
| 3            | 26 x 40 x 16 feet, S. E. | 588                                              | 588   | 391   | 391   | 588                                                         | 588   | 391   | 391   | 87.5                 | 588                                                         | 588   | 391   | 391   | 979                 | 245                           | 67.6                       | 98                               | 19.9                                          | 1,005                            | 1,190.5       | 20 x 26                         | 2                        | 965                       | 20 x 24                                             |
| Totals       |                          | 1,764                                            | 1,764 | 1,173 | 1,173 | 1,764                                                       | 1,764 | 1,173 | 1,173 | 262.5                | 1,764                                                       | 1,764 | 1,173 | 1,173 | 2,937               | 735                           | 202.8                      | 294                              | 59.7                                          | 3,015                            | 3,571.5       | 40 x 60                         | ..                       | 2,332                     | .....                                               |
| 1            | Hall.                    | 170                                              | 170   | 170   | 170   | 170                                                         | 170   | 170   | 170   | 98.5                 | 170                                                         | 170   | 170   | 170   | 635                 | 159                           | 70.3                       | 63.6                             | 16                                            | 275                              | 345           | 9 x 12                          | 4                        | 392                       | .....                                               |
| 2            | Hall.                    | 189                                              | 189   | 189   | 189   | 189                                                         | 189   | 189   | 189   | 140                  | 189                                                         | 189   | 189   | 189   | 692                 | 173                           | 108.0                      | 69.2                             | 21.3                                          | 275                              | 474           | 7 x 10                          | 4                        | 270                       | .....                                               |
| 3            | Hall.                    | 189                                              | 189   | 189   | 189   | 189                                                         | 189   | 189   | 189   | 140                  | 189                                                         | 189   | 189   | 189   | 692                 | 173                           | 108.0                      | 69.2                             | 21.3                                          | 275                              | 474           | 5 x 10                          | 4                        | 200                       | .....                                               |
| Totals       |                          | 548                                              | 548   | 548   | 548   | 548                                                         | 548   | 548   | 548   | 378.5                | 548                                                         | 548   | 548   | 548   | 2,019               | 505                           | 286.3                      | 202.0                            | 58.6                                          | 825                              | 1,293         | 12 x 20                         | 4                        | 862                       | .....                                               |
| Grand Totals |                          | 4,076                                            | 4,076 | 2,894 | 2,894 | 4,076                                                       | 4,076 | 2,894 | 2,894 | 1,166.0              | 4,076                                                       | 4,076 | 2,894 | 2,894 | 13,899              | 3,477                         | 1,177.5                    | 1,400.8                          | 299.2                                         | 12,885                           | 15,594        | .....                           | ..                       | 10,190                    | .....                                               |



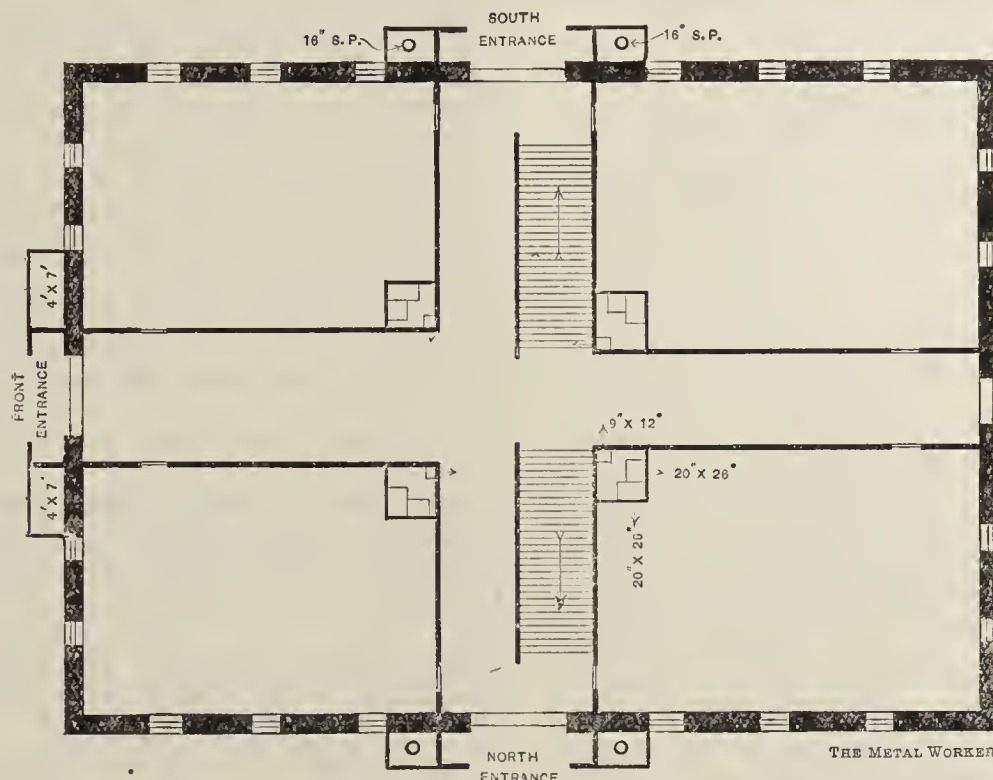
be put in every furnace one can be used with each set of heaters and four in the building. The water heaters should each be connected up to an open tank holding from 5 to 10 gallons of water, and be placed between two large heaters, with a tank on the outside to fill the tank inside automatically. This outside tank should have a ball cock connected with the house supply, to fill the tank inside of the heater casings for moistening the air. The warm air shafts should be 4 feet 3 inches by 4 feet 3 inches.

There are a great number of local details that "C. S." will have to attend to, such as hall vents, air filters, &c. After his job is complete and he makes the test, let us know how much coal, wood and paper is burnt, and the temperature of the outside air and the air in the

passes through the hot flues and it does not cost a cent to heat all the hot water that we require for domestic purposes. This may not be exactly what "A. B." inquires about, but it may, nevertheless, be of interest to him and other readers of *The Metal Worker*.

### PROTECTING PARTITION PIPES.

From C. W., Paterson, N. J.—I have seen the inquiry of "B. W." in *The Metal Worker* of September 20, and would say that the protection needed depends on the temperature of the air which passes through the pipe. If the pipes are so small that the furnace has to be run hard and the air heated to an excessively high temperature to heat the rooms there can be no doubt

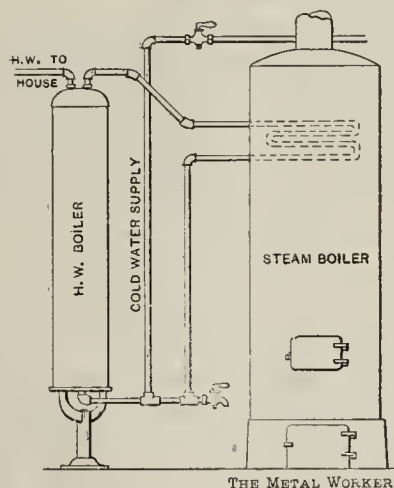


Wants Help to Heat a School.

building, and full details of his test, with the time expired during the tests. The plan and elevation herewith gives some further details, and the table gives the dimensions.

### HEATING WATER WITH STEAM.

From R. B., Norwich, Conn.—In reply to the inquiry of "A. B." in *The Metal Worker* of September 6 I submit a sketch showing how I heat water for my house



Heating Water With Steam.

from a steam boiler. I have placed a coil of 1-inch pipe in the flues of the heater where the hot gases must pass over it. The coil is not connected with the steam chamber or the water section at any point. It simply

that two coats of asbestos paper afford but a slight protection. On the other hand, if the temperature of the air is low, not over 140 or 150 degrees, it is improbable that fire will ever be started for lack of insulation of the heating pipes. It is far better, however, to be on the safe side and use some form of metal lath where the pipe runs up for the mortar to key against.

### SIZES OF CATALOGUES.

From Bronson-Walton Company, Cleveland, Ohio. We have noticed your remarks in reference to standardizing manufacturers' catalogues, and we agree fully with your ideas. A medium sized concern like ours, who issue a small catalogue, often find that the jobber displaces it and is unable to find it when wanted. This would be obviated if three or four standard sizes were to rule, so that the jobber could readily file each size by itself. We believe that such an influential publication as *The Metal Worker* can do a valuable service to the trade by agitating this matter, and we assure you of our hearty support.

### VENTILATING SCHOOL HOUSES.

From M. M. N.—We would be glad to know which plan of heating and ventilating an eight or ten room, two-story stone school building with the usual size of rooms is the best where no power or fans are to be used. One method would be the gravity system with only one vent opening into each room, leading directly into separate shafts. Another method would be the gravity system with only one vent in each room leading directly into one main vent shaft, with a stack heater. Another system, where several vent openings

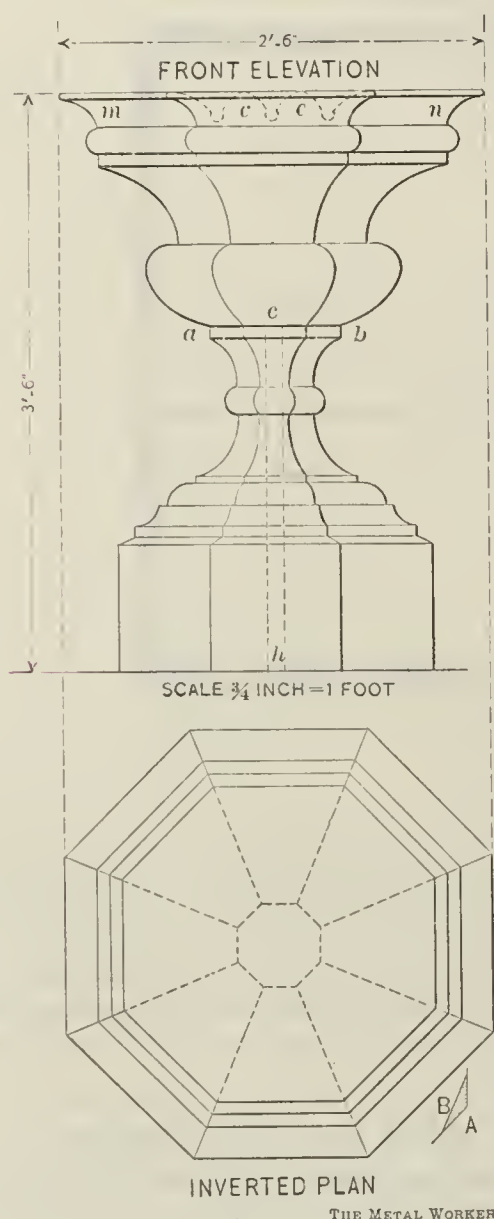


are made under the windows, then run under the floor and down to the foul air gathering room in the basement, thence into one-vent stack having a stack heater.

**Note.**—We should be glad if our experienced readers will give their views on this subject. Where the ventilators and flues are of the proper size, and provision is made to have them operate positively, either by means of a stack heater or heating coil from a small steam plant, it would seem that there would be little choice, provided the flues and openings were large enough to prevent drafts.

#### DETAIL FOR LAWN VASE.

From C. H. R., Catskill, N. Y.—Inclosed is a sketch of a vase which I desire to make of galvanized iron; it is to be octagon in shape, 3 feet 6 inches high and 2



Detail for Lawn Vase.

feet 6 inches in diameter at the top. Can you furnish me with full size patterns, and at what price? I desire the vase for use on the front lawn and want to put flowers in it. The shape and proportions I leave to your judgment.

**Answer.**—In the accompanying illustration is shown a 1-inch scale detail of a vase proportioned to the size desired by our correspondent, which is drawn 1-12 full size. If our correspondent will carefully follow the measurements, using the scale rule, he will have no trouble in preparing the detail, after which the patterns can be developed, using the method shown on page 116 in "The New Metal Worker Pattern Book." After the vase is soldered together it will be well to re-enforce the corners, as is shown at A, by soldering vertical strips of metal about 2 inches wide, as shown at B, the entire height of the vase. A heavy bottom should be soldered in position at a b, to receive the ground, and a tube, c-h, carried through the center of the vase to dis-

charge the surplus water. If desired, scollops can be cut on to the curved member, m n, as at c-e.

#### LAYING TIN ROOFING.

From R. J. S., Evergreen, L. I.—I am having a tin roof put on my house and ask if you will please inform me which is the best way to put it on, as there is very little pitch to it. There is a dispute between two roofers; one says to commence from the bottom and the other says to start from the top. They have requested me to write to you for information, and I hope you will inform me through *The Metal Worker* as to the best method.

**Answer.**—As our correspondent states that the roof has little pitch, the tin should be laid flat seam, each sheet locked sheet by sheet. The roof should certainly be started at the bottom, so that the rain water will pass over the seams or locks and not against them. While some roofers claim that by starting the roof at the top the solder has more tendency to flow into the seam when soldering, this is bad practice, which should not be recommended, for if the roof is flat enough so that flat seam roofing can be employed there is no excuse for not thoroughly "soaking" the seams with solder; and if the roof is so steep that the solder would flow away from the seam when soldering, then flat seam roofing should not be employed, but standing lock roofing should be used. The subject of flat and standing lock roofing is very thoroughly covered in "The Roofing, Cornice and Skylight Manual," which can be obtained from our Book Department.

#### PATTERN FOR A SHIP VENTILATOR.

From J. W., New York.—I want to make a ship ventilator with a round base and round mouth. I have tried the rule given in problem 204 in "The New Metal Worker Pattern Book," but find it will not give a satisfactory result. Rather than take up your time by a lengthy explanation, I struck out a pattern for a small ventilator and send you the first piece. You will see the way it draws back in the throat.

**Answer.**—If our correspondent will call at this office we will be pleased to show him a model of a small ventilator constructed according to problem 204, taking the piece which he sent as a basis for the pattern.

#### THE VENTILATION QUESTION.

From G. B., Iowa.—The contributions appearing in *The Metal Worker* of late in regard to ventilation have been somewhat contradictory. Now as the assertion of one contributor is as good as that of another, at what conclusion do you arrive? Would it not be this? Carbonic acid gas laden air is heavier than pure air, both being at the same temperature. But the air coming from the lungs, being warmer than the air in the room, would rise; but how far? Only a little way, for it cools the moment it leaves the person; consequently, it will soon strike air of its own temperature, when it will stop rising, and as it must be cooling all the time it will soon settle to the floor, whence it must be exhausted or the lower part of the room will eventually be laden with carbonic acid gas. Consequently we must ventilate from the floor. I should like to have the opinion of readers of *The Metal Worker* upon this matter.

The Cooper Union, New York City, opened on Monday evening with all classes full and about 800 more applicants for admission than could be accommodated. Nine hundred and thirty persons made application for admission to enter the first year's scientific course, of whom only 150 could be admitted. The total registration in all classes in the institution is about 3000.

Thomas B. Stewart, for many years a manufacturer of metals and grates at 21 East Seventeenth street, New York City, died on September 20 at his summer home at Upper Dam, Maine, aged 73 years. Mr. Stewart was a native of Ireland and came to this country in 1850. He was the father of Perez M. Stewart, Superintendent of Buildings of New York City.



# TRADE REPORT.

## MARKET SUMMARY.

**Pig Tin** is dull and weak, and has declined about  $\frac{3}{4}$ c.  
**Copper** is quiet with a weakening tendency.  
**Pig Lead** is in fair demand; prices are firm and unchanged.  
**Spelter** is strong, with a light demand and continued scarcity of spot metal.  
**Antimony** is quiet and about  $\frac{1}{8}$ c. lower.  
**Nickel** is in moderate demand at unchanged prices.  
**Aluminum** continues active at former prices.  
**Tin Plates** are very dull, but without quotable change.  
**Sheets** are rather dull and weak, but without material change in prices.  
**Scrap Iron** is very strong and a shade higher.  
**Scrap Brass and Copper** are weak and dull.  
**American Foundry Iron** continues very scarce at nominal prices.  
**Sheet Copper** is in fair demand at unchanged prices.  
**Sheet Zinc** is moderately active and firm in price.  
**Hardware** is moving actively, with prices firm in nearly all lines.  
**Plumbers' Supplies** are in good demand and prices are well maintained.  
**Wrought Iron Pipe** is active and firm in price.  
**Cast Iron Soil Pipe and Fittings** continue exceptionally active demand; prices will probably be advanced October 1.  
**Solder** has declined  $\frac{1}{4}$ c. per lb.  
**Winter Goods**, such as Coal Hods, Dampers, Stove Pipe, &c., are in very heavy demand, with prices firm.  
**Dripping Pans** are firm and somewhat higher.  
**Lamps and Lanterns** are moving in large volume at former prices.  
**Wire Nails** are in better demand, with prices unchanged.  
**Cut Nails** continue in fair demand at former prices.  
**Window Glass** is quiet, with no change yet announced in prices.  
**White Lead in Oil** is in good demand, with prices firm.  
**Linseed Oil** has declined 2c. a gallon; demand is active.  
**Spirits Turpentine** is strong and about 1c. a gallon higher.

## METAL MARKET.

New York, September 26, 1902.

**Pig Tin.**—Throughout the entire week the Tin market has declined steadily, owing to heavy offerings of spot and nearby delivery, combined with a very light demand. Indications from all sides point to the fact that the consumption of Tin has fallen off materially. This falling off is attributed to the unfavorable conditions prevailing in the Tin Plate trade. The market at the close was weak, with indications of a probable further decline. Jobbers' prices are about  $\frac{3}{4}$ c. lower than those ruling at the date of our last report. Straits Pig in small lots is now quoted at 26 $\frac{3}{4}$ c. to 27 $\frac{1}{4}$ c. per lb.

**Copper.**—The market for Copper continues in an extremely dull condition, and buying for home consumption is on the smallest scale. The consumption has evidently fallen off somewhat this month. Export demand is light, and at prices as low as prevailing before the recent boom. Jobbers' quotations are unchanged, Lake Ingot in small lots being quoted at about 12 $\frac{1}{4}$ c. to 12 $\frac{3}{4}$ c., and Casting Copper at 12 $\frac{1}{4}$ c. to 12 $\frac{3}{4}$ c. per lb. The market closed with a rather weak tendency, and the possibility of a further decline in prices. Exports so far this month amount to 8325 tons, while the imports have been very heavy, amounting to 3327 tons, most of which came from London. The fact that large quantities of Copper

are being received from London is looked upon as significant in the trade, especially as many reports are being sent out from that center regarding the decrease in local supplies. A sharp decline in Copper prices took place this week in the London market.

**Sheet Copper.**—Conditions in this market do not vary from those prevailing for some weeks past. A steady demand of fair volume is noted, and prices continue without change on the basis of 18c. per lb. for Sheet Copper from store.

**Pig Lead.**—The Lead market is absolutely without change. A fair business is reported, mostly in small lots, and prices are steady and unchanged. American Pig in small lots is quoted at 4.45c. to 4 $\frac{1}{2}$ c. per lb. St. Louis reports a steady market at that point with no change in prices.

**Spelter.**—In the West the market has accumulated strength and prices have advanced during the week. In this market the efforts of those in control of the situation have not been so successful, and prices remain about the same as they were last week. Arrivals here have been heavier, but spot metal is still scarce and high in price. Jobbers quote good Western brands in small lots at 6 $\frac{1}{2}$ c. to 6 $\frac{3}{4}$ c. per lb.

**Sheet Zinc.**—The demand for Sheet Zinc is of fair proportions. Prices are firm and unchanged at 6 $\frac{3}{4}$ c. per lb. for 600-lb. cask lots, and 7 $\frac{1}{4}$ c. to 7 $\frac{1}{2}$ c. for smaller quantities.

**Antimony.**—This metal is a little lower in price, and the volume of business has been rather light. Cookson's in small lots is selling at about 10 $\frac{1}{4}$ c. to 10 $\frac{3}{4}$ c. per lb., and Hallett's at 8 $\frac{1}{4}$ c. to 8 $\frac{1}{2}$ c.

**Nickel.**—No change is noted in this metal. Small lots rule at about 55c. to 60c. per lb.

**Aluminum.**—The demand for Aluminum is good and prices are without change. Small lots of No. 1 Ingot, guaranteed 99 per cent. pure, are quoted at 37c. per lb. and 100-lb. lots at 35c.

**Tin Plates.**—The market is dull to the point of depression, with an entire absence of any important buying. Stocks in makers' hands are said to be accumulating, notwithstanding the idleness of a large part of the producing capacity. The larger buyers are still holding out of the market, apparently with the impression that prices may be lower and also to await the outcome of the further efforts which, it is understood, the American Tin Plate Company will make to obtain from the union workmen a concession in wages on export Tin Plate labor. The retail trade has been rather dull also this week and jobbers' stocks are said to be growing to the point of inconvenience. In some cases cutting of prices is said to have been done by holders, who are anxious to dispose of a portion of their superfluous Plates. The American Tin Plate Company are still quoting for delivery up to December 1 on the basis ruling for more than a year past. Jobbers' quoted prices show no change. American Bessemer Coke Plates, 1C, 14 x 20, in moderate sized lots, delivered at New York or corresponding points, are quoted at about \$1.65 to \$1.85 per box. Welsh Tin Plates have declined 1 $\frac{1}{2}$  pence more, and are now quoted at 12 shillings 3 pence f.o.b. Swansea.

**Sheets.**—The Sheet market shows no new developments. The demand for both Black and Galvanized Sheets is of rather limited proportions. So much new capacity in Sheets has come on the market in the last six months that the present falling off in demand is very keenly felt. However, prices are saved from any radical decline by the high price of Sheet Bars and Billets. Black Sheets are relatively firmer than Galvanized, prices on the latter being rather demoralized owing to light demand and liberal supplies. Jobbers quote No. 27 One Pass Cold Rolled Soft Steel Sheets, in small lots, at about 3.55c. to 3.60c., and No. 27 Galvanized Sheets at about 4.40c. to 4.55c.



Chicago reports are as follows: The volume of business in both Heavy and Light Sheets is liberal and the demand continues active, but with the keen competition of independent mills, who are offering freely, the market is still unsettled and prices irregular. The jobbing demand is also on a liberal scale, some dealers reporting the volume of business transacted during the last three months the largest in a like period in the history of trade, but there is a determined fight and prices are unsettled. No. 27 Black Sheets in small lots from store are offered at 3.25c. to 3.35c., Chicago, and Galvanized Sheets at 4.30c. to 4.40c. for No. 27.

**Old Metals.**—The demand for Scrap Iron continues very active, and supplies are absorbed about as quickly as offered. Consequently prices are strong and rather higher. Scrap Brass and Copper are weak and dull. Dealers are paying about the following rates for moderate sized lots delivered at New York or corresponding points:

|                                        |         |                  |
|----------------------------------------|---------|------------------|
| Heavy Copper.....                      | per lb. | 10½c.            |
| Light and Tinned Copper.....           | per lb. | 9½c.             |
| Heavy Brass.....                       | per lb. | 8½c.             |
| Light Brass.....                       | per lb. | 6½c.             |
| Lead.....                              | per lb. | 3½c.             |
| Tea Lead.....                          | per lb. | 3 c.             |
| Zinc.....                              | per lb. | 3½c.             |
| Pure Aluminum Sheet.....               | per lb. | 22 c.            |
| Cast Aluminum.....                     | per lb. | 17 c.            |
| No. 1 Pewter.....                      | per lb. | 18 c.            |
| No. 2 Pewter.....                      | per lb. | 9 c.             |
| Tin Plate, per gross ton.....          |         | to \$5.00        |
| Wrought Iron Scrap, per gross ton..... |         | \$15.50 to 16.00 |
| Heavy Cast Scrap, per gross ton.....   |         | 14.50 to 15.00   |
| Stove Plate Scrap, per gross ton.....  |         | 10.50 to 11.00   |
| Burnt Iron, per gross ton.....         |         | 9.50 to 10.00    |

## THE PIG IRON MARKET.

**NEW YORK.**—No sales of any magnitude are reported to consumers in this immediate vicinity. A good deal of foreign iron is being taken right along to meet immediate requirements, but we cannot learn that importers or consumers have placed any orders for large lots lately. For delivery in 1903 the following quotations are made: Northern Iron, at tidewater, No. 1 X, \$23.25 to \$24.75; No. 2 X, \$22 to \$22.75; No. 2 Plain, \$21 to \$21.75. Tennessee and Alabama brands, in New York and vicinity: No. 1 Foundry, \$23.25 to \$23.50; No. 2 Foundry, \$22.25 to \$22.50; No. 3 Foundry, \$21.50 to \$22. We quote foreign Ferromanganese \$19, ex-ship.

**CHICAGO.**—No. 2 foreign Iron has been offering at about \$23, Chicago, duty paid, to arrive, but there is very little spot foreign Iron available. The few lots which are on the market are held at much higher prices—\$26 to \$27. Some consumers report that they are better supplied for current wants, some of them reporting better deliveries on old contracts. Other foundries find as much difficulty as ever, and a few have shut down or are running only a few heats during the week, because of inability to obtain enough Iron. More ample offerings of local Iron for immediate delivery are noted on a basis of \$26 for No. 2, and some sales have been made on this basis. A few sales of Southern No. 2 Foundry, ranging from carload lots to a few hundred ton lots, were made at about \$27.15. The feeling is unsettled, however, and prices vary widely. For next year's delivery the market seems steady. One sale of 1200 tons of No. 1 Southern Foundry was reported to have been made on the basis of \$21.50 at furnace for the second half of 1903. This, however, is exceptional, few consumers being willing to contract for more than the first six months. The prices current for delivery during the first half of 1903 are as follows:

|                                |                    |
|--------------------------------|--------------------|
| Lake Superior Charcoal.....    | \$26.00 to \$27.00 |
| Local Coke Foundry, No. 1..... | 23.50 to 24.00     |
| Local Coke Foundry, No. 2..... | 23.00 to 23.50     |
| Local Coke Foundry, No. 3..... | 22.50 to 23.00     |
| Local Scotch, No. 1.....       | 24.00 to 24.50     |
| Southern Coke, No. 1.....      | 24.15 to 24.65     |
| Southern Coke, No. 2.....      | 23.65 to 24.15     |
| Southern Coke, No. 3.....      | 23.15 to 23.65     |
| Southern Coke, No. 1 Soft..... | 24.15 to 24.65     |
| Southern Coke, No. 2 Soft..... | 23.65 to 24.15     |

**PHILADELPHIA.**—A large amount of trading in small lots is being done, probably for the reason that large lots are unavailable, and also because consumers do not seem inclined to make extended engagements. Most of the sales are of foreign Iron. Nearly all the commission houses are handling this class of Iron. Sales of Scotch Iron are made at \$22.50 to \$23.50, New York, duty paid,

and Middlesbro at \$20.75 to \$21.25. These prices are for lots of 100 tons. The cost of removal to consumers' yards must be added to these figures, which is about 50c. per ton for city, and 75c. to \$1 for outlying points. American Irons are unchanged from last week, and there is very little doing, except when deliveries can be made before the close of the year, in which case No. 2 X Foundry will bring \$23.50 to \$24. General quotations are practically the same as a week ago—viz., \$20.50 to \$21 for Middlesbro No. 3, on dock, and \$22.50 to \$23.50 for Scotch Iron, delivered alongside ship. American Irons are at about the same figures as last week for city or nearby deliveries during the first half of next year, and \$1 to \$1.50 more for this year's deliveries—viz., No. 1 X Foundry, \$23.50 to \$24.50; No. 2 X Foundry, \$22.00 to \$22.50; No. 2 Plain, \$21 to \$22.

**PITTSBURGH.**—The best feature of the Pig Iron situation is the fact that Coke shipments are greatly improved and are very good this week. The Pig Iron market is quiet so far as actual sales go, but prices are very firm. No. 2 Foundry Iron is strong, and for prompt delivery has sold at \$23, at furnace, equal to \$23.75, Pittsburgh.

**CINCINNATI.**—The exceptionally high price of Coke has put quite a damper on melting operations, and spot Iron, as a consequence, is not so freely in demand. Nevertheless, prices have not weakened a particle, but if anything are higher to-day than they have been. The situation is decidedly stronger in Iron for delivery after the first of the year, and while there are said to be some furnaces who are accepting a little business on the basis of \$18.50 to \$19, yet the great majority of Southern furnaces are holding, where they have stock to sell, to the basis of \$20, Birmingham, for No. 2 Foundry. For spot delivery No. 2 is quotable by reason of a small sale reported on the basis of \$23 and upward, Birmingham. We quote, f.o.b. Cincinnati, for 1902 delivery, as follows:

|                                |                    |
|--------------------------------|--------------------|
| Southern Coke, No. 1.....      | \$26.75 to \$27.25 |
| Southern Coke, No. 2.....      | 26.25 to 26.50     |
| Southern Coke, No. 3.....      | 23.50 to 24.50     |
| Southern Coke, No. 4.....      | 21.25 to 22.00     |
| Southern Coke, No. 1 Soft..... | to 26.25           |
| Southern Coke, No. 2 Soft..... | to 25.75           |
| Ohio Silvery, No. 1.....       | 29.10 to 29.60     |
| Ohio Silvery, No. 2.....       | to 29.60           |
| Lake Superior Coke, No. 1..... | 26.10 to 26.60     |
| Lake Superior Coke, No. 2..... | 25.60 to 26.10     |
| Lake Superior Coke, No. 3..... | 25.10 to 25.60     |

## CHICAGO REPORT.

**Scrap Iron and Steel.**—Receipts of all kinds continue light and dealers finding a freer outlet have advanced buying prices from 50c. to \$1 a ton on straight carload lots of each grade. For mixed grades in carload lots 50c. per ton less is allowed. The following are the buying prices of dealers in carload lots, Chicago:

|                                                        | Per net ton.       |
|--------------------------------------------------------|--------------------|
| Country Wrought Scrap.....                             | \$16.00 to \$16.50 |
| Machinery Cast.....                                    | 15.00 to 15.50     |
| Malleable Cast.....                                    | 14.00 to 14.50     |
| Stove Plate (free from burnt).....                     | 11.00 to 11.50     |
| Burnt Iron and Grate Bars.....                         | 10.00 to 10.50     |
| Sheet Iron and Hoops.....                              | 10.00 to 11.00     |
| Plow Steel.....                                        | 13.50 to 14.00     |
| Breaking Stock.....                                    | 13.00 to 13.50     |
| Old Boilers—whole (Iron).....                          | 9.50 to 10.00      |
| Old Boilers (Iron) cut in single Sheets and Rings..... | 14.00 to 14.50     |
| Old Gas Pipe and Boiler Tubes.....                     | 14.00 to 14.50     |
| Cast Borings.....                                      | 9.50 to 10.00      |
| Turnings.....                                          | 13.00 to 13.50     |
| Horseshoes.....                                        | 14.00 to 15.00     |

**Old Metals.**—A weaker tone has developed in both Copper and Brass, and the tendency of prices is downward. Offerings are larger and the demand is only moderate. Zinc and Lead continue firm at full prices. The following are the buying prices of dealers, Chicago:

|                            | Per lb. |
|----------------------------|---------|
| Copper Wire and Heavy..... | 10½c.   |
| Copper Bottoms.....        | 9½c.    |
| Copper Clips.....          | 10½c.   |
| Red Brass.....             | 10½c.   |
| Yellow Brass.....          | 7½c.    |
| Red Brass Borings.....     | 9½c.    |
| Yellow Brass Borings.....  | 7½c.    |
| Light Brass.....           | 6½c.    |
| Pipe Lead.....             | 3.70c.  |
| Tea Lead.....              | 3.35c.  |
| Zinc.....                  | 3.45c.  |
| Tin Foil.....              | 21 c.   |
| Pewter, No. 1.....         | 18 c.   |
| Pewter, No. 2.....         | 11 c.   |
| Aluminum.....              | 20 c.   |

**Old Rubber.**—The market has continued firm, with moderate receipts, and dealers are freer buyers at pre-



vious prices. The following are the quotations current in this market:

|                            | Per<br>net ton. | Per lb. |
|----------------------------|-----------------|---------|
| Garden Hose.....           | \$25.00         | .....   |
| Air Brake Hose.....        | 50.00           | .....   |
| Rubber Shoes.....          | .....           | 7 c.    |
| Rubber Car Springs.....    | .....           | 5 c.    |
| Inside Bicycle Tubing..... | .....           | 22 c.   |
| Outside Tubing.....        | .....           | 5 c.    |
| Black Rubber.....          | .....           | 4 c.    |
| White Rubber.....          | .....           | 8½c.    |

**Rags.**—Current offerings are only moderate and with a fair demand dealers continue to pay previous prices, buying Country Mixed at 75c. to 85c. per 100 lbs., Chicago delivery.

**Anthracite Coal.**—No reliable quotations can be given for any grade or size of Anthracite Coal on track. Very little, if any, that is available for sale on the open market has been received during the week, and both buyers and sellers are at sea. A nominal quotation may be made of \$12 per ton, Chicago delivery.

## THE HARDWARE TRADE.

The market reflects the advancing season, and demands for fall and winter goods are coming in more frequently and more urgently. This class of wares at the present time demands a larger degree of attention than miscellaneous lines, which, however, continue to move in fair volume. The jobbing trade are not just now placing heavy orders and are apparently sufficiently covered with the goods in stock and by orders in process of execution. There is no disposition to buy speculatively, and merchants as a rule are acting very conservatively. Manufacturers report less difficulty than some time ago in obtaining raw material, except pig iron, the scarcity of which causes much inconvenience and delay. Manufacturers generally are full of business, but some of them are more desirous of booking orders than has of late been the case. Production is going on at a great pace, but the character of the demand and consumption is such as to absorb the output of factories with little difficulty except in a few lines, principally those in which new competition has been developed by consolidations or combinations. The Shovel situation, for example, is getting decidedly unsatisfactory. In some heavy lines, of which Wire products and Wrought Pipe may be cited as examples, new makers who are in the field or about to enter it promise to subject the market to a test of its strength. Export business shows both gains and losses. In some of the markets American goods of certain lines are having difficulty owing to lower prices of goods made abroad, but in others large and varied quantities of our products are going out.

## NOTES ON PRICES

**Cast Iron Soil Pipe and Fittings.**—A meeting of the manufacturers of Cast Iron Soil Pipe and Fittings was held in New York City on Friday, September 26, at which a renewal of the agreement of last year was consummated. This agreement binds the manufacturers together for one year, beginning with November 1, and all members of the association are pledged to maintain the prices issued by the Executive Committee of the association. They are also bound to respect each others' territory and observe all regulations pertaining to freight, terms of sale and shipments. The question of issuing new prices to cover the advance in raw material was subjected to a lengthened discussion. The matter was referred to the Price Committee, with power to issue new prices in the immediate future, at their own discretion. It is understood, however, that the new prices are already agreed upon, but were not promulgated, and will not be until the delegates to the meeting have returned to their foundries. An advance of 5 per cent. will probably be announced on October 1.

**Enameled Iron Bathtubs.**—The manufacturers of Enameled Iron Bathtubs who are independent of the enameling interests which have come to be known as the trusts held a meeting in Pittsburgh on Wednesday, September 24. It is understood that a permanent organization was effected, but up to the present no confirmation

of this report has been received. The Bathtub business has been in a most deplorable condition for some time past, none of the independent manufacturers being able to obtain prices which would give them a profitable return upon their sales. If the new organization has been consummated there is no doubt that Enameled Iron Tubs will undergo an advance in price, this being particularly true of the Tubs of an inferior make which are now being marketed at a price no greater than ordinary Copper Tubs. It will remain to be seen, however, whether the organized manufacturers can control the market to a sufficient extent to prevent price cutting.

**Coal Hods, Stove Pipe, &c.**—The run on Coal Hods, Dampers, Stove Pipe and kindred goods is of larger volume than usual and prices are firmly held.

**Dripping Pans.**—The market for Dripping Pans is decidedly firm, and some of the manufacturers have recently announced somewhat higher prices.

**Solder.**—The price of Solder has again dropped in sympathy with the decline in the Tin market. Jobbers are now quoting Half and Half, guaranteed, at 18¼ to 18½ cents per pound, and No. 1 at 15¼ to 16¼ cents.

**Lamps and Lanterns.**—The demand for Lamps and Lanterns of all kinds is exceptionally brisk and above the average for the season. Prices hold at about the same as a year ago.

**Wire Nails.**—A slight improvement is noted in the demand for Wire Nails, which is expected to show further activity before long. Mills are shipping Nails more promptly. Prices are fairly maintained, small lots from store being quoted at \$2.25 to \$2.30 per keg.

**Cut Nails.**—The condition of the Cut Nail market shows no change. The demand continues in about the usual proportions, Iron Cut Nails still being scarce. Small lots from store are quoted at \$2.30 per keg.

**Window Glass.**—Stocks of Glass are generally light, but buyers are holding off until the future of the market becomes more definite. The Jobbers' Association's quotation for single and double strength Glass from store continues at 88 and 5 per cent. discount.

**White Lead.**—The demand for White Lead in Oil is good for prompt shipment, also for future delivery covering the next six months. White Lead in Oil from store is sold in moderate sized lots at 6½ to 6¾ cents per pound.

**Linseed Oil.**—On September 20 the price of City Raw Oil was reduced by the manufacturers 2 cents per gallon, making the present price for retail quantities 55½ to 56 cents per gallon. The demand is active for small lots of Oil, as stocks are low, buyers not eaning to make contracts for future delivery with lower prices expected. Stocks in manufacturers' hands are also low, as they have not anticipated their requirements for seed to any extent on a falling market. It is probable that the entire output for next month will be required to supply the hand to mouth demand, and present prices for Oil will probably rule until there is a further decline in seed values.

**Spirits Turpentine.**—The market at this point has shown additional strength during the week, with advancing prices. Jobbers' quotations rule about 1 cent a gallon higher than those given in our last report, Turpentine in small lots being quoted at 50 to 50½ cents per gallon. The advance has had a tendency to restrict buying, which has been confined to small lots. The situation is strong, both at this point and in the South, owing to the expected increase in domestic requirements next month.

**The Milwaukee Corrugating Company,** Milwaukee, Wis., are sending out a reduced discount sheet applying on their Catalogue A, covering the various lines of Roofing and Siding Materials, of which they are the manufacturers.

The interesting statement is made in the report of a railroad company recently issued that the building in their territory of numerous trolley lines had been found to have a tendency to distribute manufacturing plants as well as the population. This distribution of traffic requires additional facilities, but largely increases the



business of the steam line. At the same time the passenger interests have not suffered from the competition of the trolley line with its cheap fare. Receipts from passenger service have increased, but the average distance of hauling each passenger has slightly lengthened. The trolley has proved an important factor in relieving congested conditions in heavily populated localities, enabling manufacturing establishments to be located wherever advantages in cheap land or railroad facilities could be secured instead of primarily considering convenience with respect to the supply of operatives.

### Incandescent and Carbureted Acetylene.

Dr. N. Caro of Berlin contributed a most interesting paper to the last Eisenach meeting of the German Acetylen Verein, describing the recent advances made in burning acetylene under a mantle, and discussing the value of acetylene carbureted by being charged with the vapor of light petroleum according to the process invented by A. Heil of Frankfurt as a fuel and an ordinary or incandescent illuminant. After asserting, says the *Ironmonger*, that considerable improvements in the construction of atmospheric acetylene burners had been effected during the past year or so, Dr. Caro admitted that there were several more difficulties to be overcome. At present the atmospheric burner is still liable to fire back to the jet at the moment of being lighted or extinguished; this causes a shock and strains the weak mantle. When once lighted, however, the burners are satisfactory. They require much care in construction, and individual specimens vary greatly in economy; some needing one, others another gas pressure to give the best results. Ordinary Welsbach mantles yield efficiencies of 84 candles per foot in about 15 liter burners; but it is doubtful whether the thoria-ceria mixture is best suited for acetylene, special experiments having shown that a light of 124 candles per foot can be obtained with special mantles. The light does not attain its maximum brightness for some 20 hours, as the mantles usually sold do not fit the flame accurately; also a side prop of metal is necessary, as the burners are not annular, and this sometimes warps and throws the mantle out of its proper position. On the other hand the luminosity of the mantle does not appreciably diminish during about 200 hours.

Carbureted acetylene exhibits a striking property in that its upper explosive limit when mixed with air is enormously lower than that of pure acetylene. The highest percentage of acetylene in air which is explosive is about 65; the highest percentage of acetylene containing 50 per cent. by volume of petroleum vapor is only 9.2 per cent. Thus it follows that a much better atmospheric burner can be constructed, for a proportion of air large enough to give the hottest flame temperature can be admitted through the lower holes, even in a large tube, without the slightest fear of the flame striking back when it is lighted, put out, or burning regularly. The ignition temperature is also about 100 degrees C. higher than that of pure acetylene, and its calorific duty is 19,000 calories per cubic meter instead of 14,000. In a 10-liter luminous jet it gives 28 candles per foot, in an incandescent burner 71 candles per foot. If the acetylene is carbureted at a somewhat high temperature, and it is then exposed to cold, part of the vapor naturally condenses; but should this happen, although the calorific value of the gas is diminished its illuminating power is increased. The partially similar product known as air gas (carbureted air) loses vapor a trifle less rapidly on exposure to cold; but in that case it loses illuminating as well as heating power. There is practically no expense involved in making the gas beyond the cost of the petroleum spirit vaporized. The new product can be burnt in a coal gas boiling burner, with a very trifling alteration to the jet. Per unit of light in an incandescent burner carbureted acetylene costs a little more than the pure gas; but as a source of heat it is about 33 per cent. cheaper. Considering the experiments detailed at length by Dr. Caro, we must come to the conclusion that this invention is likely to prove of great value to the acetylene industry. At present, although acetylene is an absolutely satisfactory illuminant, it is not so satisfactory

in warming or cooking stoves; and the opponents of the gas always urge this point when the complete illumination of a country village is under contemplation. By adopting the Heil process the cost per luminous flame is somewhat raised, the cost per incandescent flame is practically unchanged; but the opportunities for obtaining a day load at the works by supplying cookers and warming stoves, and not improbably a few small gas engines, at a price and economy which were impossible previously are greatly increased.

The *Aluminum World* quotes an aluminium manufacturer as stating that Fels-naphtha soap is excellent for washing and whitening polished aluminum. A number of utensils that have come under his observation were kept in fine order by the use of this soap.

It is facetiously remarked by a local paper that a Chicago architect has finally succeeded in constructing a flat so small that in it there isn't even any room for improvement.

| CONTENTS.                                                  |       |
|------------------------------------------------------------|-------|
|                                                            | PAGE. |
| Editorial—                                                 |       |
| The Anthracite Strike.....                                 | 43    |
| Handsome Returns from Agriculture.....                     | 43    |
| Trouble with Street Heating Systems.....                   | 43    |
| Editorial Notes.....                                       | 44    |
| An Iceless Refrigerator.....                               | 44    |
| The Late Henry A. Richardson. Portrait.....                | 45    |
| The Evolution of a Red Cross Range. Illustrated.....       | 46    |
| Peninsular Stoves, Ranges and Heaters.....                 | 48    |
| The Williams Adjustable Stove Pipe Fastener. Illustrated.. | 48    |
| The 400 Series Quaker Furnace. Illustrated.....            | 49    |
| Columbian Stoves, Ranges and Furnaces.....                 | 49    |
| The New P. P. Stewart Range. Illustrated.....              | 50    |
| Foundry Supplies.....                                      | 50    |
| The New Superior Hot Blast Furnace. Illustrated.....       | 51    |
| Royal Furnaces on the Pacific Coast.....                   | 51    |
| Pittsburgh Supply Company's New Catalogue.....             | 51    |
| The Bay State Home Grand Range.....                        | 51    |
| Odd Plates.....                                            | 52    |
| Tropical Oil Heater. Illustrated.....                      | 53    |
| The Plumbing and Steam Supply League.....                  | 54    |
| A Fuel Oil Burning Apparatus.....                          | 54    |
| The F. & M. Pipe Hangers. Illustrated.....                 | 54    |
| The Economy Steam Radiator. Illustrated.....               | 55    |
| A Shop Time System. Illustrated.....                       | 55    |
| Simple Snags in Hot Water Heating. Illustrated.....        | 56    |
| Acetylene Supplies.....                                    | 56    |
| The Kellogg-Mackay-Cameron Company Catalogue.....          | 56    |
| Hartford Master Plumbers' Outing.....                      | 57    |
| New York City Notes.....                                   | 57    |
| Heating and Plumbing Notes.....                            | 57    |
| New Firms and Changes.....                                 | 59    |
| Trade Notes.....                                           | 59    |
| The Production of Natural Gas in 1901.....                 | 60    |
| Stove and Hardware Dealers.....                            | 61    |
| The Dewees Wood Sheet Mills.....                           | 62    |
| The New Viellard & Osswald Inclined Press. Illustrated..   | 62    |
| A Useful Booklet for Roofers.....                          | 63    |
| The Moran Stay Gutter Hanger. Illustrated.....             | 63    |
| The Tin Plate Situation.....                               | 64    |
| A Severe Spinning Test. Illustrated.....                   | 64    |
| Flashings.....                                             | 64    |
| United States Patents.....                                 | 65    |
| New Publication.....                                       | 65    |
| The Dandy Electric Carpet and Clothes Whip. Illustrated..  | 65    |
| The Letter Box—                                            |       |
| Wants Help to Heat a School. Illustrated.....              | 66    |
| Heating Water with Steam. Illustrated.....                 | 67    |
| Protecting Partition Pipes.....                            | 67    |
| Sizes of Catalogues.....                                   | 67    |
| Ventilating School Houses.....                             | 67    |
| Detail for Lawn Vase. Illustrated.....                     | 68    |
| Laying Tin Roofing.....                                    | 68    |
| Pattern for a Ship Ventilator.....                         | 68    |
| The Ventilation Question.....                              | 68    |
| Trade Report—                                              |       |
| Market Summary.....                                        | 69    |
| Metal Market.....                                          | 69    |
| The Pig Iron Market.....                                   | 70    |
| Chicago Report.....                                        | 70    |
| The Hardware Trade.....                                    | 71    |
| Notes on Prices.....                                       | 71    |
| Incandescent and Carbureted Acetylene.....                 | 72    |
| Metal and Miscellaneous Prices.....                        | 73    |
| Labor Exchange—                                            |       |
| Help and Situations Wanted.....                            | 77    |



# ROOFING SUPPLIES, METALS, TIN PLATES, &c.

REVISED SEPTEMBER 26, 1902.

| Aluminum—                                                           |        |        |        |
|---------------------------------------------------------------------|--------|--------|--------|
| No. 1 Aluminum (guaranteed over 99% Pure), in ingots for remelting. | lb.    | 37¢    |        |
| Small lots.                                                         | lb.    | 35¢    |        |
| 100-lb lots.                                                        | lb.    | 35¢    |        |
| Aluminum Sheet, B. & S. gauge.                                      |        |        |        |
| Wider than 6-in.                                                    | 14-in. | 24-in. |        |
| And including.                                                      | 14-in. | 24-in. | 30-in. |
| Nos. 13 to 19.                                                      | \$0.42 | \$0.44 | \$0.47 |
| " 20.                                                               | .44    | .46    | .49    |
| " 21 to 23.                                                         | .46    | .48    | .51    |
| " 24.                                                               | .48    | .50    | .53    |
| " 25.                                                               | .47    | .51    | .54    |
| " 26.                                                               | .47    | .54    | .59    |
| " 27.                                                               | .48    | .57    | .62    |
| " 28.                                                               | .49    | .60    | .69    |
| " 29.                                                               | .50    | .64    | .77    |
| " 30.                                                               | .50    | .64    | .77    |

Note.—Lots of less than 50 lbs 5¢ per lb extra.

**Antimony—**

Cookson..... lb. 10 @ 10 1/4¢  
Hallett's..... lb. 8 3/4 @ 8 3/4¢  
U. S..... lb. 8 1/4 @ 8 1/4¢

**Brass, Roll and Sheet..... 30%**

**Conductors—**

Corrugated.

Galvanized, 1/2 or more, Not d. 75%  
Not Nested..... 70 & 12 1/2%  
Plain Round, 1/2 or more..... 75%

Nested..... 75%  
Galvanized, Plain Round, Not Nested..... 70 & 12 1/2%

**Spiral Lock Seam Pipe—**

Galvanized..... 60 @ 60 & 11%

**Spiral Riveted.**

Galvanized..... 40%  
See also Elbows and Shoes; Eave Trough Miters; Strainers, Conductor.

**Conductor Strainers—**

See Strainers, Conductor

**Copper—**

Lake Ingot..... 12 1/2 @ 12 3/4¢  
Casting..... 12 1/4 @ 12 3/4¢  
Sheet and Bolt..... 18¢ @ 18¢ basis  
Cold Rolled Sheets..... 19¢ @ 19¢ basis  
Cold Rolled and Polished Sheets..... 20¢ basis

Planished Sheets..... 21¢ basis  
Bottoms, Pits and Flats..... 22¢ basis

**Eave Trough Galvanized**

Territory..... L. C. L. 80%  
Eastern..... 75 & 17 1/2%  
Central..... 75 & 17 1/2%  
Southern..... 75 & 17 1/2%  
S. Western..... 75 & 17 1/2%  
Terms, 2% for cash.

**Eave Trough Miters—**

Lap or Slip Joint..... 1st, 25%

**Elbows—Plain Adjustable—**

Eastern List.

Tin..... 30%  
Galvanized..... 30%  
Perfect Elbows..... 40%

**Stove Pipe—**

Four-Piece

4 1/2 5 5/8 6-inch.  
No. 1. \$0.80 .85 .90 1.00 1.05 per doz.  
No. 2. .65 .70 .75 .80 .85  
No. 3. .60 .63 .65 .70 .85

**Elbows and Shoes—**

Galvanized..... 60%

**Gasoline—**

See Petroleum Products.

**Iron, Sheet—Black.**

|                 | One Pass, C. R. | R. G.    |
|-----------------|-----------------|----------|
|                 | Soft Steel.     | Cleaned. |
| Nos. 14 to 16.  | 3.20            | 3.30     |
| Nos. 18 to 21.  | 3.30            | 3.40     |
| Nos. 22 to 24.  | 3.40            | 3.50     |
| Nos. 25 and 26. | 3.50            | 3.60     |
| No. 27.         | 3.60            | 3.70     |
| No. 28.         | 3.70            | 3.80     |

Russia, Planished, &c.

Genuine Russia, accord.

ing to assortment..... lb 11 @ 11¢  
Do. Stained..... lb 10 @ 10¢  
Patent Planished, lb A, 11¢; B, 10¢ net

**Galvanized.**

Nos. 14 and 16..... lb 3.40 @ 3.45¢  
Nos. 18 and 20..... lb 3.65 @ 3.75¢  
Nos. 22 and 24..... lb 3.95 @ 4.05¢  
No. 26..... lb 4.20 @ 4.35¢  
No. 27..... lb 4.50 @ 4.65¢  
No. 28..... lb 4.80 @ 4.95¢  
No. 30..... lb 5.95 @ 6.15¢

No. 20 and lighter, 36 inches wide, 25¢ higher.

**Lead—**

American Plg..... 4.45 @ 4 1/2¢  
Bar..... 5.50 @ 5 1/2¢  
Pipe..... 12 1/2¢ off  
Tin Lined Pipe..... 12 1/2¢ off  
Sheet Lead..... 7 1/4¢ off  
Old Lead in exchange, 3 1/2¢ @ lb.

**Mitres Eave Trough—**

See Eave Trough Miters.

**Nickel—**

Per lb..... 55 @ 60¢

**Paints, Oils &c.—**

**Leads—**

Lead, American White, in Oil;  
Lots of 500 lb or over..... 6 1/4 @ 6 1/2¢  
Lots less than 500 lb..... 6 1/2 @ 6 3/4¢  
Lead, White, in oil, 25 lb tin  
pails, add to keg price..... @ 1/2¢  
Lead, White, in oil, 12 1/2 lb tin  
pails, add to keg price..... @ 1¢  
Lead, White, in oil, 1 to 5 lb as-  
sorted tins, add to keg price..... @ 1 1/2¢  
Lead, White, Dry in bbls..... 5 1/4 @ 6¢  
Lead, Red, bbls., 1/2 bbls. and kegs;  
Lots 500 lb or over..... @ 6¢  
Lots less than 500 lb..... @ 6 1/2¢

**Oils—**

Linseed, City, raw..... lb gal. 55¢ @ 56¢  
Linseed, City, boiled..... lb gal. 57¢ @ 58¢  
Linseed State and West'n, raw..... lb gal. 55¢ @ 56¢

**Spirits Turpentine—**

In Southern bbls..... 48 1/2 @ 49¢  
In machine bbls..... 49 1/2 @ 50¢

**Putty—**

In bulk..... \$2.23  
In bladders..... 2.25  
In cans 12 lb to 25 lb..... 2.25  
In cans 1 lb to 5 lb..... 3.25

**Petroleum Products—**

In Barrels (Barrel Included)

Stove Gasoline..... lb gal. 11¢ @ 11¢  
Kerosene..... lb gal. 12¢ @ 13¢

**Pipe, Block Tin—**

Per lb..... 37¢

**Pipe Drain**

**Pipe, Spiral—**

See Conductors.

**Registers—**

List Sept. 2, 1901

Black Japanned..... 70%  
White Japanned..... 70%  
Nickel Plated..... 70%  
Bronze Finishes in Imitation of Gold,  
Silver, Copper or Bronze..... 70%  
Electroplated in Brass, Bronze or  
Copper..... 70%  
White Porcelain..... 60%  
Solid Brass and Bronze Metal..... 50%

**Roofing Material—**

1 Ply Tarred Paper..... lb ton. \$31.00 @ 32.00  
2 Ply Tarred Paper..... lb roll, 108 sq. ft. 55 @ 60¢  
3 Ply Tarred Paper..... lb roll, 108 sq. ft. 80 @ 85¢

Slater's Felt..... lb ton, \$35.00 @ 36.00  
Roofing Pitch..... lb bbl. \$3.50

**Rosin—**

Common and Good—Strained

Rosin, C. & D..... lb bbl. \$1.55 @ 1.60  
Rosin, E. & F..... lb bbl. 1.40 @ 1.70  
Rosin, G. & H..... lb bbl. 1.72 @ 1.95  
Rosin, I. & K..... lb bbl. 2.35 @ 3.00  
Rosin, M. & N..... lb bbl. 3.35 @ 3.80

**Shoes and Elbows—**

See Elbows and Shoes.

**Slate Roofing—**

f. o. b. oars, Quarry Station.

According to size.

Pennsylvania:

Best Bangor, lb sqr..... \$3.75 @ \$6.10  
No. 1 Bangor Ribbon, lb sqr 3.50 @ 3.75  
Pen Argyle, lb sqr..... 3.50 @ 4.50  
Peach Bottom, lb sqr..... 5.25 @ 6.35  
No. 1 Chapman, lb sqr..... 3.75 @ 4.75  
No. 1 Penna. Black, lb sqr 3.15 @ 4.15  
Unfading Washington Ban-  
gor, lb sqr..... 3.00 @ 4.50

Vermont:

No. 1 Sea Green, lb sqr..... \$2.25 @ \$3.50  
Purple, lb sqr..... 4.50 @ 5.00  
Unfading Green, lb sqr..... 4.25 @ 5.25  
Red, lb sqr..... 7.00 @ 11.00

Maine:

Brownville, Unfading Black  
No. 1, lb sqr..... \$5.25 @ 7.50

**Solder—**

1/2 lb guaranteed..... 18 1/4 @ 18 3/4¢  
No. 1..... 15 1/4 @ 17 1/4¢  
Prices of Solder indicated by privat  
brands vary according to composition.

**Soldering Fluids—**

Per Pound.

Concentrated Flux..... 4c  
Eureka Flux:  
Triple Strength..... 3c  
Extra Concentrated..... 4 1/2c  
Crystal..... 7c  
Gedney's Fluid..... 2c  
Lennox Fluid..... 2c  
Perfection Flux..... 3c  
Yager's Salts, 1 lb. bottles..... each, 50¢  
1 lb. bottles, per lb., 45¢

**Soldering Coppers—**

Per lb..... 22 @ 24¢

**Speiter—**

Western Speiter..... 6 1/2 @ 6 3/4¢

**Spiral Pipe—**

See Conductors.

**Stove Pipe Elbows—**

See Elbows, Stove Pipe.

**Stove Trucks—**

See Trucks, Stove.

**Strainers, Conductor—**

Galvanized..... 50%

**Tin Pigs and Bars—**

Banca, pigs, lb..... 26 1/4 @ 27 1/4¢  
Stralts, pigs, lb..... 26 1/4 @ 27 1/4¢  
Stralts, in bars, lb..... 27 1/4 @ 28 1/4¢

**Tin Plates American**

Charcoal Plates, Bright—

N. B.—The price of 20 x 28 sizes  
double the price of 14 x 20.

Calland Grade:

IC, 14 x 20..... \$6.75  
IX, 14 x 20..... 8.25  
IXX, 14 x 20..... 9.50  
IXXX, 14 x 20..... 10.75  
IXXXX, 14 x 20..... 12.00

Melyn Grade:

IC, 14 x 20..... 6.25  
IX, 14 x 20..... 7.75  
IXX, 14 x 20..... 9.00  
IXXX, 14 x 20..... 10.25  
IXXXX, 14 x 20..... 11.50

Allaway Grade:

IC, 14 x 20..... 5.75  
IX, 14 x 20..... 6.85  
IXX, 14 x 20..... 7.95  
IXXX, 14 x 20..... 9.05  
IXXXX, 14 x 20..... 10.15

**Coke Plates, Bright—**

Bessemer

Steel, or  
equal to J. IC, 14 x 20..... \$4.90 @ 5.00

B. Grade,  
full weight

IX, 14 x 20..... \$6.00

N. B.—The reduction per box on lighter  
plates than IC, 14 x 20, is as follows:

100 lb..... 15¢  
95 lb..... 20¢  
90 lb..... 25¢  
85 lb..... 30¢

**Terne Plates—**

N. B.—The following prices are for IC  
20 x 28, the rate for 14 x 20 being half as  
much. IX is usually held at \$2 per box  
advance for 8 to 10 lb coating and \$2.50  
to \$3 advance for 15 lb and upward.

About 40 lb coating..... \$16.00 @ 16.50  
About 30 lb coating..... 15.25 @ 15.75  
About 20 lb coating..... 13.25 @ 13.75  
About 15 lb coating..... 11.25 @ 11.75  
About 8 lb coating..... 9.50 @ 10.00

**Boiler Plates, American—**

IXX, 14 x 28..(112 sheets)..... \$12.50  
IXX, 14 x 28..(112 sheets)..... 13.50  
IXX, 14 x 31..(112 sheets)..... 15.00

**Troughs Eave—**

See Eave Trough.

**Trucks, Stove—**

Improved Lock Frame, per doz..... \$15.00  
Steel Lock Frame, per doz..... 18.00  
Daisy Improved pattern, lb doz..... 18.00

**Tubes and Tubing—**

Brazed Brass, List June 6, 1898..... 40%  
Copper and Bronze, 3c per lb. list more  
than Brass.  
Seamless Brass Tubes, net list Feb. 6,  
1899

Tin..... 50%  
Galvanized..... 50%  
Fittings for do..... 40%

**Zinc—**

600 lb casks lb..... 6 1/4¢  
Per lb..... 7 1/4 @ 7 1/2¢

# PLUMBERS' AND STEAM FITTERS' SUPPLIES.

**Boilers, Galvanized—**

Standard Boilers:

30 gal..... 72 1/2¢  
35 and 40 gal..... 70¢  
Other sizes up to 52 gal..... 65¢  
52 gal. and above..... 55 & 5¢

Extra Heavy Boilers:

18 to 52 gal..... 60¢  
53 gal. and above..... 50 & 5¢

**Brass Work, Plumbers'—**

List of December 7, 1896.

Compression:

Basin Cocks..... 60 & 10%  
Bath Cocks and Double Bath Cocks..... 60 & 10%  
Bibs..... 60 & 10%  
Bibs, Flanged..... 60 & 10%

Fuller:

Bibs..... 70%  
Basin Cocks, Nos. 1 to 4..... 70%  
Bath Cocks, No. 4..... \$2.40 each net

Ground Key Work:

Finished Bibs..... 60 & 5¢  
Rough Bibs..... 60 & 5¢  
Rough Stop and Stop and Waste  
Cocks..... 70 @ 70 & 5¢  
Rough Stop and Stop and Waste  
Cocks, Patented..... 65 @ 65 & 5¢

**Miscellaneous—**

Basin Clamps..... 60 @ 65¢  
Basin Plugs..... 60 @ 65¢  
Chain Stays..... 60 @ 65¢  
Iron Boiler Couplings:

Lead Pipe. Iron Pipe.  
Plain Face, set \$0.95 \$1.05  
Ground Face set \$1.00 \$1.10  
Sink or Bath and Wash Tray Plugs..... 60 @ 65¢  
Soldering Nipples..... 70 & 5¢ @ 75¢  
Soldering Unions..... 70 & 5¢ @ 75¢  
Union Elbows, Hot Water Heating..... 75 @ 75 & 15¢

**Cocks, Valves &c.—**

**Cocks—**

Brass—

Air and Radiator Air..... 75 @ 75 & 5¢  
Gas Meter and Union Meter..... 65 @ 70¢  
Steam..... 65 @ 70¢

**Iron—**

All Iron..... 70 @ 70 & 10%  
Iron with Brass Plugs..... 65 @ 70¢

**Valves—**

Brass—

Check..... 65 @ 70¢  
Garden Hose..... 65 @ 70¢  
Gate..... 65 @ 70¢  
Globe and Angle, hose outlet..... 45 @ 65 & 10%  
Globe, Angle and Cross..... 65 @ 10 @ 70 & 5¢  
Horizontal, Vertical and Angle Check..... 65 @ 65 & 10%

Hot Water Radiator..... 75¢  
Radiator..... 70 @ 10%  
Safety..... 65¢  
Safety, Low Pressure..... 65¢  
Jenkins' Disc:  
Check..... 65¢  
Gate..... 65¢  
Globe, Angle and Cross..... 70¢  
Radiator..... 80¢  
Radiator, Corner..... 75¢  
Safety..... 65¢

**Iron—**

Iron Body..... 70 @ 70 & 5¢  
Foot..... 65 @ 70¢

Jenkins' Bros.:

All Iron, except Gate..... 40 & 5¢  
All Iron Gate..... 35 @ 40¢  
Iron Body, except Gate..... 60¢  
Iron Body Gate..... 50 @ 50 & 5¢  
Swing Check..... 50¢

**Earthenware**

Brown Glazed Wash Tubs..... 20%

Brown Glazed Sinks, Kitchen and  
Pantry..... 30%

Basins, Urinals and Hoppers..... 45%  
Closet Bowls, Sundries, Washouts  
and Pedestals..... 50%

**Fittings—**

Brass Fittings—

Finished..... 70 @ 75¢  
Rough..... 70 @ 75¢  
Bushings..... 70 @ 75¢  
Nipples..... 70 @ 70 & 1/2¢  
Unions, Rough and Finished..... 70 @ 70 & 5¢

**Iron—**

Cast Iron Fittings, Black and Galva-  
nized, Standard sizes..... 65 @ 70¢  
Cast Iron Bushings and Plugs..... 65 @ 70¢  
Cast Iron Flanges..... 65 @ 70¢  
Cast Iron Floor Flanges..... 65 @ 70¢  
Malleable Iron Fittings (from lb list)..... 50%  
" " Bushings..... 65 @ 70¢  
" " Unions..... 65 @ 70¢  
" " Unions, Flange 60 &



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| Adler, H. Co..... 13                          | Colwell Lead Co..... 41                       | Gurney Heater Mfg. Co..... 23                           | Miner & Peck Mfg. Co..... 83                      | Selleck, A. C..... 31                         |
| American Blower Co..... 27                    | Cooney & Gelger..... 80                       | Hanson & Van Winkle Co... 38                            | Monarch Stove & Mfg. Co... 12                     | Sheppard, Isaac A. & Co.... 1                 |
| American Galvanizing Wks., 81                 | Cooper, D. G..... 14                          | Harrington & King Perfo-<br>rating Co..... 74           | Moncrief F'ce & Fdry. Co... 28                    | Shields, W. H. & Co..... 37                   |
| American Radiator Co..... 21                  | Cope, Geo. W..... 35                          | Hart & Cooley Co..... 32                                | Montross Metal Shingle Co.. 85                    | Smith, H. B. Co..... 17                       |
| American Sheet Steel Co... 1&84               | Cortright Metal Roofing Co.. 85               | Hart & Crouse Co..... 22                                | Morgan & Co..... 38                               | Smith & Anthony Co..... 92                    |
| American Steam Gage &<br>Valve Mfg. Co..... 1 | Cosby, C. H..... 34                           | Heath, C. C. & Co..... 35                               | Mott, J. L. Iron Works..... 30                    | Smith & Thayer Co..... 25                     |
| American Tin Plate Co..... 84                 | Crosby Steam Gage & Valve<br>Co..... 1        | Hessler, H. E. Co..... 34                               | Mueller, L. J. F'ce Co... 23                      | Somerset Stove Fdry. Co.... 29                |
| Anderson Coupling Co..... 40                  | Curtis & Curtis Co..... 40                    | Hoffman, Geo. W..... 38                                 | Mullins, W. H..... 88                             | Sommer's, John, Son..... 1                    |
| Arcade Mfg. Co..... 34                        | Dangler Stove & Mfg. Co.... 11                | Horan Stay Hanger Co..... 82                            | Munsell, E. & Co..... 34                          | Special Notices..... 78                       |
| Armstrong Mfg. Co..... 40                     | Danzer Metal Works..... 89                    | Howes, S. M. Co... 13, 32, 35&36                        | National Enameling & Stamp-<br>ing Co..... 42     | Sperry, D. R. & Co..... 79                    |
| Asheville Mica Co..... 34                     | Day Metallic Mfg. Co..... 39                  | Howson & Howson..... 79                                 | National Pipe Bending Co.. 33                     | Stamford Foundry Co..... 15                   |
| Asphalt Ready Roofing Co.. 85                 | Dietz, R. E. Co..... 79                       | Hubbell, Harvey..... 41                                 | New York Iron Roofing &<br>Corrugating Co..... 81 | Stanton Heater Co..... 21                     |
| Ayling Bros..... 35                           | Dighton Furnace Co..... 26                    | Huse, Joseph & Son..... 34                              | New York Trade School.... 73                      | Steel & Iron Aluminum Coat-<br>ing Co..... 83 |
| Barstow Stove Co..... 92                      | Dixon, Jos. Crucible Co..... 38               | Ideal Register Co..... 31                               | Niagara Machine & Tool Wks 89                     | Stiles & Parker Press Co.... 90               |
| Beckwith, P. D., Est. of..... 2               | Douhle Truss Cornice Brake<br>Co..... 88      | Independent Register Co.... 31                          | Nickel Plate Stove Polish Co 35                   | Stocking, E. B..... 79                        |
| Bell, W. C..... 90                            | Drake, W. H..... 33                           | International Heater Co..... 3                          | Norwall Mfg. Co..... 41                           | Stolz, Frank D..... 27                        |
| Belleville Stove Works..... 7                 | Drouve, G. Co..... 80                         | Iwan Bros..... 80                                       | O'Halloran & Jacobs..... 81                       | Stover Mfg. Co..... 34                        |
| Berger Bros. Co..... 86                       | Edwards, J. H..... 38                         | Jannet, Steinmetz & Co..... 88                          | Ohl, Geo. A. & Co..... 90                         | Stowell Mfg. Co..... 88                       |
| Bergstrom Bros. & Co..... 24                  | Edwards Mfg. Co..... 86                       | Jenkins Bros..... 1                                     | Oshorn, J. M. & L. A..... 82                      | Swett, A. L. Iron Works.... 27                |
| Bertsch & Co..... 90                          | Ellers, J. H. & Co..... 87                    | Joliet Stove Works..... 6                               | Ostrander, W. R. & Co..... 80                     | Syracuse Heater Co..... 20                    |
| Best Light Co..... 38                         | Energy Elevator Co..... 79                    | Keene, Geo. C. & Co..... 91                             | Patric Furnace Co..... 23                         | Taylor Co., N. & G..... 92                    |
| Bibb, B. C. Stove Co..... 29                  | Enterprise Foundry Co..... 31                 | Kelsey Heating Co..... 42                               | Paul, J. C. & Co..... 35                          | Thatcher Furnace Co..... 26                   |
| Bickelhaupt, G. Skylight Wks 82               | Excelsior Steel Furnace Co.. 30               | Kemp, C. M. Mfg. Co..... 40                             | Peck, Stow & Wilcox Co.... 89                     | Troy Nickel Works..... 36                     |
| Bliss, E. W. Co..... 90                       | Falkenau-Sinclair Mch. Co. 89                 | Kewanee Boiler Co..... 25                               | Peck-Williamson Co..... 18                        | Union Stove Works..... 32                     |
| Blodgett, G. S. Co..... 27                    | Fenn, Geo. E..... 80                          | Kieley & Mueller..... 1                                 | Pell, John Enameling Wks.. 37                     | Utica Heater Co..... 19                       |
| Boynton Furnace Co..... 20                    | Ferricup Metal Co..... 81                     | Klaine, F. A. & Co..... 11                              | Perkins, J. L. & Co..... 80                       | Valentine, M. D. & Bro. Co.. 37               |
| Brand Stove Co..... 32                        | Floyd, Wells & Co..... 22                     | Koven, L. O. & Bro..... 39                              | Pierce, Butler & Pierce Mfg.<br>Co..... 27        | Vedder Pattern Works..... 35                  |
| Bray, J. & Co..... 81                         | Follanshee Bros. Co..... 1                    | Kramer Bros..... 34                                     | Pittsburgh Stove & Range Co 4                     | Vogel, William & Bros..... 79                 |
| Bridgeport Crucible Co..... 37                | Forest City Fdry. & Mfg. Co. 27               | Lawless, John H..... 39                                 | Pocock, Oliver..... 91                            | Waite, Rsulet & Co..... 91                    |
| Brien Heater Co..... 27                       | Forest City Paint & Varnish<br>Co..... 88     | Lawrence-Letts Elbow Co... 36                           | Portsmouth Stove and Range<br>Co..... 4           | Walker & Pratt Mfg. Co... 5                   |
| Bruce & Cook..... 85&92                       | Foster, F. W. Mfg. Co..... 41                 | Lennox Manufacturing Co.. 28                            | Presbrey Stove Lining Co... 37                    | Walworth Mfg. Co..... 1                       |
| Buffalo Forge Co..... 80                      | Frand, Martin J. & Co..... 82                 | Litchfield, J. M..... 79                                | Quaker Mfg. Co..... 25                            | Washburne, E. G. & Co.. 80&89                 |
| Burton, W. J. & Co..... 31                    | Friedley & Voshard..... 96                    | McClure & Co..... 92                                    | Quincy Fdry. & Novelty Co. 13                     | Waterbury Brass Co..... 1                     |
| Callahan, Geo. & Co..... 41                   | Frink, L. P..... 82                           | McLeod & Henry Co..... 37                               | Rathbone, Sard & Co..... 8                        | Weir Stove Co..... 92                         |
| Canton Steel Roofing Co.... 87                | Front Rank Steel Furnace Co 26                | McSherry, Chas..... 89                                  | Richmond Co..... 16                               | Wells, H. & Co..... 88                        |
| Carroll, J. B..... 39                         | Fuller & Warren Co..... 1                     | Magee Furnace Co..... 1                                 | Robinson, J. M. & Co..... 91                      | Whaley-Totten Co..... 88                      |
| Castle, Wilmot & Co..... 30                   | Galesburg Cornice Works... 87                 | Magoon, A. J. & Son..... 38                             | Rochester Radiator Co..... 31                     | Wheeler, W. A..... 91                         |
| Champion Steel Range Co... 29                 | Galt, John & Sons..... 81                     | March-Browhack Stove Co. 24                             | St. Louis Enameling Co.... 15                     | White, Warner Co..... 29                      |
| Chattanooga Steel Roofing<br>Co..... 85       | Genuine Bangor Slate Co... 81                 | Marcy Stove Repair Co... 37                             | Salem Nail Co..... 81                             | Willard, Wm. G..... 33                        |
| Chicago Furnace Supply Co. 33                 | Glessel, Henry & Co..... 41                   | Marston, I. G. & Co..... 39                             | Saunders, D. Sons..... 40                         | Williams Stove Lining Co.. 36                 |
| Chicago Stove Works..... 9                    | Globe Iron Rfg. & Corrugat-<br>ing Co..... 85 | Mersfelder Pattern Works.. 34                           | Schill Bros. Co..... 15                           | Wister, L. & R. & Co..... 92                  |
| Cincinnati Stamping Co.... 85                 | Globe Ventilator Co..... 80                   | Metropolis Sheet Metals &<br>Stove Repairing Co..... 28 | Schneider & Trenkamp Co.. 12                      | Wolff, L. Mfg. Co..... 39                     |
| Clark, Henry N. Co..... 30                    | Gohelle Pattern Co..... 35                    | Meurer Bros. Co..... 83                                 | Schrawiesers Metal Lath<br>Works..... 82          | Wood, Alan Co..... 85                         |
| Clark, Quien & Morse..... 87                  | Gordon, W. J..... 91                          | Meyer, F. & Bro. Co..... 25                             | Schwah, R. J. & Sons Co.... 24                    | Wood & Bishop Co..... 28                      |
| Clason, Arch. Metal Works.. 79                | Gorton & Lidgerwood Co.... 1                  | Michigan Stove Co..... 10                               |                                                   | Young, Jos. H..... 38                         |
| Clayton & Lambert Mfg. Co.. 33                |                                               | Millar, Chas. & Soa Co..... 92                          |                                                   | Zucker & Levett & Loeh Co.. 38                |
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National Pipe Bending Co., New Haven, Conn.  
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Wolff, L. Mfg. Co., Chicago, Ill.  
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St. Louis Enameling Co., St. Louis, Mo.

Schilli Bros. Co., Crestline, O.

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Mass.

Stamford Foundry Co., Stamford, Ct.

Thatcher Furnace Co., 240 Water st.,  
N. Y.Union Stove Works, 70 Beekman St.,  
N. Y.

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Howes, S. M. Co., Boston, Mass.

Metropolis Sheet Metals & Stove Re-  
pairing Co., Newark, N. J.

Monarch Stove &amp; Mfg. Co., Mansfield, O.

Union Stove Works, 70 Beekman St.,  
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Ohio.

Heath, C. C. &amp; Co., Baltimore, Md.

Monarch Stove &amp; Mfg. Co., Mansfield, O.

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Schneider & Trenkamp Co., Clevel-  
and, O.Union Stove Works, 70 Beekman St.,  
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Meurer Bros. Co., Brooklyn, N. Y.

Niagara Machine & Tool Wks., Buffalo,  
N. Y.

Oll, Geo. A. &amp; Co., Newark, N. J.

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Stiles & Parker Press Co., Brooklyn,  
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**Tinners' Trimmings.**

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Follansbee Bros. Co., Pittsburgh, Pa.

Gumme, McFarland &amp; Co., Phila., Pa.

McClure &amp; Co., Pittsburgh, Pa.

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Clark, Henry N. Co., Boston, Mass.

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Kemp, C. M. Mfg. Co., Baltimore, Md.

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Cleveland, Ohio.**Wind Gates.**

Miner &amp; Peck Mfg. Co., New Haven, Ct.

**Window Operating Apparatus.**

Drouve, G. Co., Bridgeport, Conn.

SEE ALPHABETICAL INDEX, PAGE 74.

# THE METAL WORKER.

With which is Incorporated The Stove and Tin Trade Journal, The Sheet Metal Builder, and Metal.

Published Weekly at the Following Subscription Price:

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Notices under this heading of reasonable length are inserted free of charge. Only those relating to employment are admitted. Write distinctly on one side of paper only, and do not use postal cards.

Original letters of reference should not be enclosed with replies to advertisements appearing in these columns as they are frequently mislaid and lost. A copy of the reference will serve the purpose.

## HELP WANTED.

A first-class RETINNER; state wages and experience. Address "Retinner," care *The Metal Worker*, Park Building, Pittsburgh, Pa. Sept. 27

First-class TINNER and SLATER; steady work; wages, \$2.75 per day. Brucks & Krantz, Canal Dover, Ohio. Sept. 27

A good, all-around man wanted for a country tin shop; one who understands tinning and iron piping. Henry Ballard, Patterson, N. Y. Sept. 27

At once, a good TINSMITH and GENERAL CLERK; steady employment; write, stating experience, age and wages expected, to Joslin Bros., Voorheesville, N. Y. Sept. 27

A TINNER who understands sheet iron and tin work; state experience, age and wages expected; prefer a tinner that can do plumbing. G. T. Rock Hardware Company, Limited, Lake Charles, La. Sept. 27

A young man with one to two years' experience in the plumbing business. A. F. Hollis, Owosso, Mich. Sept. 27

SALESMEN calling on the stove trade, to handle a complete line of stoves and ranges on commission; state territory. The Baldwin Stove Company, 859 Rose Building, Cleveland, Ohio. Sept. 27

A first-class TINNER who can do inside and outside work; must be sober and a hustler; steady work year around at good wages for right man; married man preferred. F. Crouse & Son, Mansfield, Ohio. Sept. 27

Good CORNICE MAKER; young man; wages \$3 per day; also a man as FOREMAN; wages \$4 per day; eight hours; come ready for work. Bleeker & Steinberg, 64 Shipman street, Newark, N. J. Sept. 27

Good CORNICEMEN and SHEET IRON WORKERS. Apply to the G. Drouve Company, Bridgeport, Conn. Sept. 27

SALESMEN; we want two or three more good specialty salesmen; fine proposition for side line. J. A. Harps Mfg. Company, Greenfield, Ohio. Sept. 27

At once, good TINNER and PLUMBER; steady work. C. E. Martin, Potsdam, N. Y. Sept. 27

Wanted at once, a good TINSMITH and PLUMBER to work in country town of about 1200 inhabitants; wages, \$15 per week. E. H. Mason, Shingle House, Pa. Sept. 27

One good TINSMITH; must be capable on tin and slate roofing, also furnace work and general jobbing; also one good plumber and steam fitter; 30c. per hour for good men. W. H. Stoyke, Huntington, N. Y. Sept. 27

A TINNER; good mechanic for inside and outside work; will give a steady job to good man. McCombs & Eddy, Connersville, Ind. Sept. 27

A first-class STOVE MOLDER; one who thoroughly understands foundry work and can, if necessary, take charge of and superintend the work; location, Kansas City, Mo. Box 100, care *The Metal Worker*, 1205 Fisher Building, Chicago, Ill. Sept. 27

A first-class STOVE PATTERN MAKER; good opportunity for a good man. Scranton Stove Works, Scranton, Pa. Sept. 27

At once, two PLUMBERS and STEAM FITTERS; sober and reliable; state age and wages expected. James Fitzgibbon, 39 East Front street, Red Bank, N. J. Sept. 27

Five STOVE MOUNTERS wanted, to whom good wages and steady work will be given. Rathbone, Sard & Co., Albany, N. Y. Sept. 27

Young man, experienced in plumbing business, to take charge of jobbing; state if understand bookkeeping. "M. E.," care *The Metal Worker*, New York. Sept. 27

Several good SHEET IRON WORKERS as road mechanics; those used to blow pipe work preferred; state wages expected, age and where last employed. Apply the Ohio Blow Pipe Company, corner Seneca and Michigan streets, Cleveland, Ohio. Sept. 27

At once, a CORNICEMAN capable of making estimates on all sheet metal work; will give good wages and steady work to sober and industrious man. 335 West Sixteenth street, New York. Sept. 27

PLUMBER for a country shop; state wages for steady work. "A. B.," care of A. L. Canfield, 284 Pearl street, New York. Sept. 27

Several CORNICE MAKERS at once; only first-class men need apply. S. D. Hicks & Son, 17 Bowker street, Boston, Mass. Sept. 27

TINSMITH, at once; first-class workman familiar with all branches, strictly sober; no others need apply; nine hours and steady job to the right man; state age, wages and experience. G. C. Winter, Southbridge, Mass. Sept. 27

Wanted, a practical FOUNDRY FOREMAN to take complete charge of molding shop and core room; must be up to date in every detail and able to handle men to the best advantage; on stove plate and water heaters in particular; give reference, age, experience and wages expected. "Foundry," care *The Metal Worker*, New York. Sept. 27

First-class SHEET IRON and CORNICE WORKER; steady work for good man. Sheahan & Groark, 285 State street, New Haven, Conn. Sept. 27

METAL STAMPER wanted in a cornice shop, who understands the handling of men and has had experience in all the branches connected therewith. Apply to Leonard Sheet Metal Works, 330 West Thirteenth street, New York. Sept. 27

Five or six good CORNICE and SKYLIGHT MAKERS. Apply, ready for work, Newburgh Cornice Works, Newburgh, N. Y. Sept. 20

At once, one good, all-round TINNER; steady job and good wages to the right man. J. B. Crowl, 211 East Main street, Alliance, Ohio. Sept. 20

TINNER; a good tinner who understands inside and outside work, also furnace and pump work, wanted by October 1; steady job to right man. Finch Brothers, Athens, Pa. Sept. 20

A first-class FURNACEMAN; one who has some knowledge of plumbing; a man who is sober and industrious; none others need apply; give full particulars. M. H. Nutter, P. O. Box 96, Pittsfield, N. H. Sept. 20

A good, all-round TINNER for inside and outside work, hot air furnace work; work the year round; state wages and references. Lantz Brothers, Shelbyville, Ill. Sept. 20

At once, a first-class TINSMITH; one good on job work. Jamson Bros., Canton, N. Y. Sept. 20

PLUMBER and TINNER; I am in need of a sober and reliable man that can do plumbing, hot water and steam heating and hot air furnace work and tinning; to such a man good wages and steady employment will be given. W. B. Frymire, Bloomfield, Neb. Sept. 20

STOVE FOUNDRY SUPERINTENDENT for concern operating 100 men; active young man who has had experience as assistant preferred; state age, experience and wages expected. "Ohio," care *The Metal Worker*, New York. Sept. 20

A first-class, sober and industrious mechanic in the cornice, skylight and bay window business to act as WORKING FOREMAN, also competent to take off quantities and make accurate estimates; give references, age and wages expected. "Industrious," care *The Metal Worker*, New York. Sept. 20

GOOD CORNICE MAKERS and TINNERS, 35 cents per hour; steady work for one year guaranteed. Duluth Corrugating & Roofing Company, Duluth, Minn. Sept. 20

At once, STEAM and HOT WATER FITTERS. Canfield Stove Company, Rondout, N. Y. Sept. 20

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Two A1 TINSMITHS and FURNACEMEN wanted at once. Fowler & Sellars, White Plains, N. Y. Sept. 20

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One first-class TINSMITH who understands furnace and heavy galvanized iron work; steady work year around to a good man. F. E. Newman, Johnstown, Pa. Sept. 20

Two or three first-class TINNERS for inside and outside work that understand hot air furnace work; none but sober, industrious men wanted; must come at once. The G. M. Griffith Company, Hinton, W. Va. Sept. 20

Experienced CORRESPONDENT; one thoroughly familiar with the metal ceiling business; references required. P. O. Box 472, Canton, Ohio. Sept. 13

An experienced STOVE and FURNACE SALESMAN to cover Pennsylvania trade; give full particulars as to experience and state salary wanted. Address "A. B.," care *The Metal Worker*, New York. Sept. 6

## SITUATIONS WANTED.

Young man (27), college education, two years' general business experience, two years' factory experience, with thorough knowledge of machine shop and foundry practice as applied to the manufacture of heating apparatus, is open for engagement after October 1. "W. H. O.," care *The Metal Worker*, New York. Sept. 27

Steady situation, by a steady, sober and reliable TIN and SHEET IRON WORKER; ten years' experience at in and outside work, roofing, spouting, general jobbing and pump work; wages \$11 per week for permanent position; references. "S. P.," Unionville, Conn. Sept. 27

Who wants a TRAVELING MAN, South or elsewhere, to introduce either a specialty or to sell tin plate or other goods to the hardware or metal trades for simply a weekly allowance to cover traveling expenses? References exchanged as to reliability. "Opportunity," care *The Metal Worker*, New York. Sept. 27

By a first-class PLUMBER, jobbing or new work; city or country; 13 years' experience; sober and industrious; single, 28 years old; wages moderate. "F. D.," care *The Metal Worker*, New York. Sept. 27

By PLUMBER, STEAM and HOT WATER FITTER, as foreman or manager of a first-class shop; has 25 years' experience; able to estimate, lay out work, take entire charge; up to date on plumbing and competent upon the various systems of heating, high or low pressure work, &c.; steady position looked for; married; first-class references. "Glade," 1624 First avenue, New York. Sept. 27

By a young man, 16 years, at general jobbing in tin, sheet iron, stoves, pumps, iron pipe, roofing, spouting, &c.; is single, sober and steady; a good general hand; \$7 per week and board for steady work. Jos. Brooks, Altoona, Pa. Sept. 27

TINSMITH, 30 years old, married; 13 years' experience; learned his trade in Germany; wishes a position in the State of Pennsylvania; city or country. "Y. O.," care Mocerter, 3609 Woodland avenue, Philadelphia, Pa. Sept. 27

To any one wanting a thoroughly practical PLUMBER of 17 years' experience in the business to act as superintendent or foreman I would be pleased to send references; Mexico or West Indies preferred. "C.," care *The Metal Worker*, 70 Kilby street, Boston, Mass. Sept. 27

By sober and industrious young man who understands tinning and furnace work, with some knowledge of plumbing and hot water heating. H. Cail, Box 712, Albion, N. Y. Sept. 27

By an experienced SALESMAN in a stove store or jobbing shop; understand all branches of the trade; best of references. "Trade," care *The Metal Worker*, New York. Sept. 27

As TRAVELING SALESMAN with manufacturer of A1 oil, gas and gasoline stoves; 14 years' experience in above line; A1 references. "F. C. B.," 326 Troup street, Rochester, N. Y. Sept. 27

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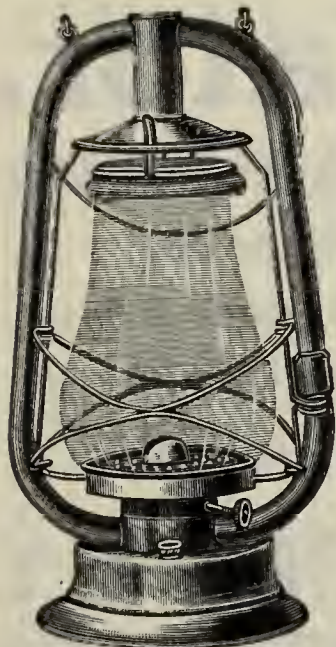
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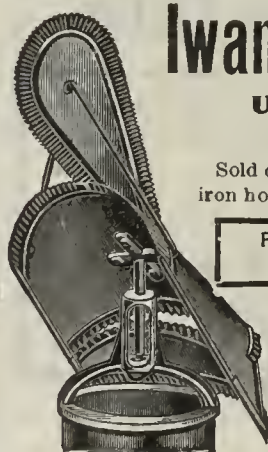
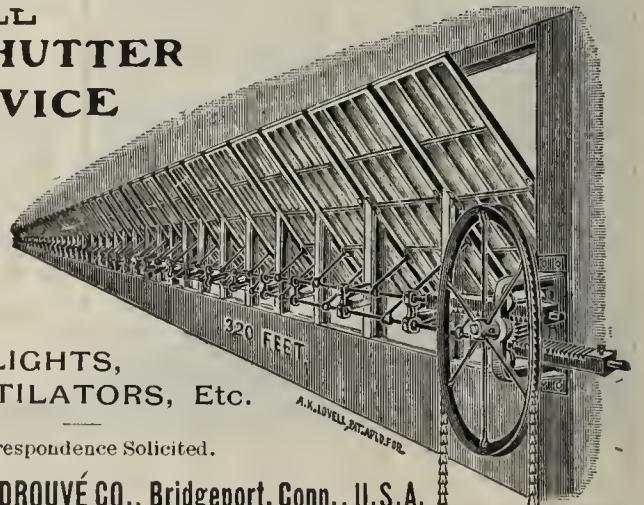
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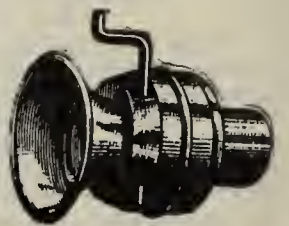


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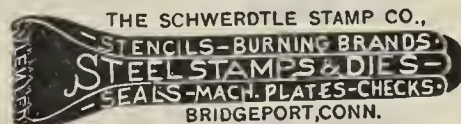
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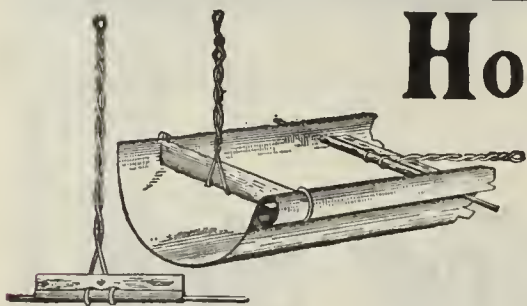
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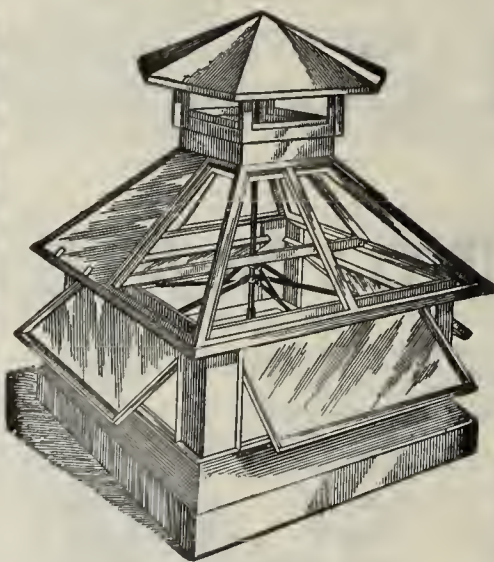
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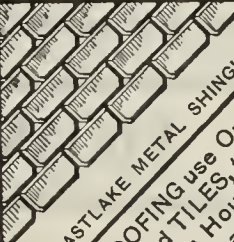
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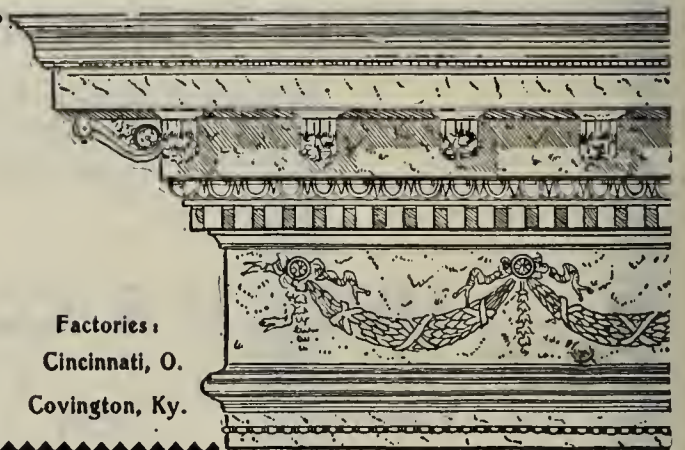
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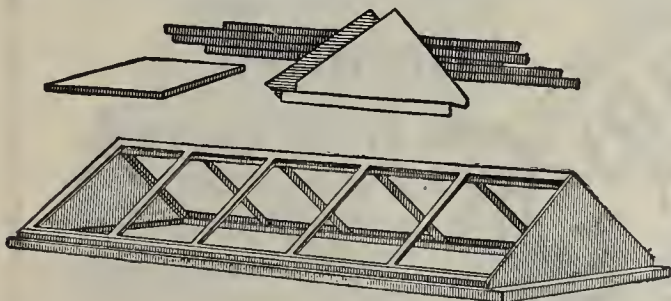
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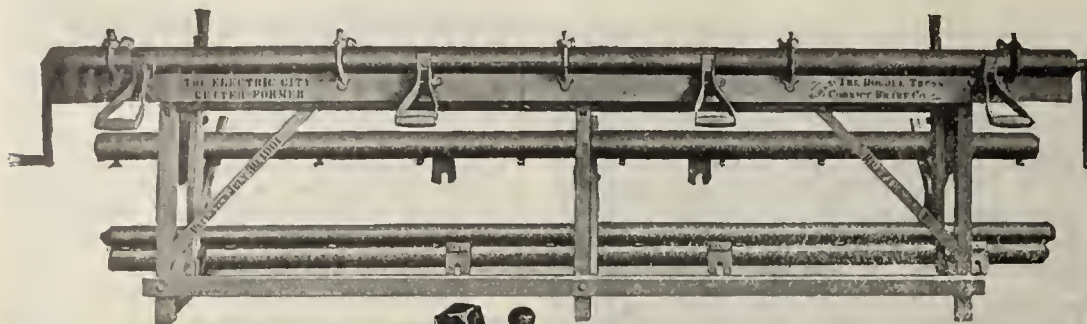
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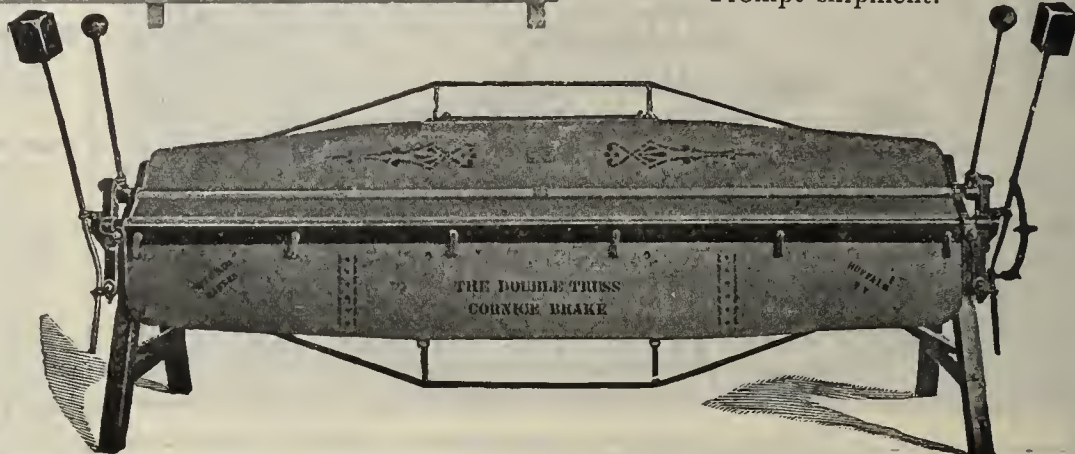


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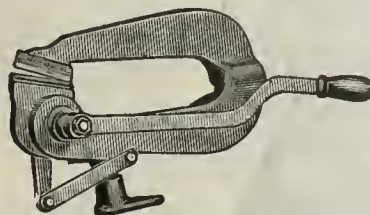
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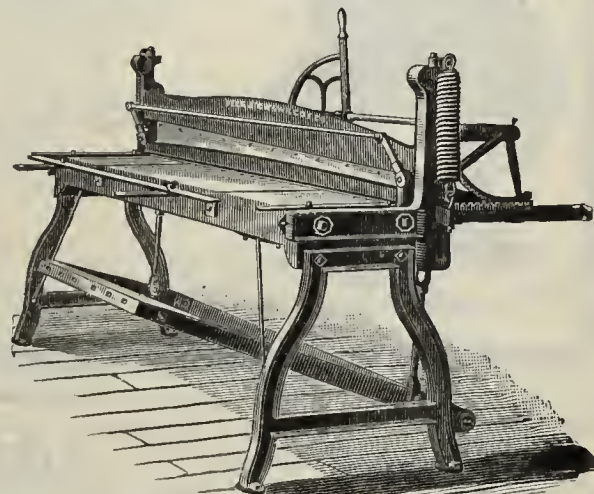
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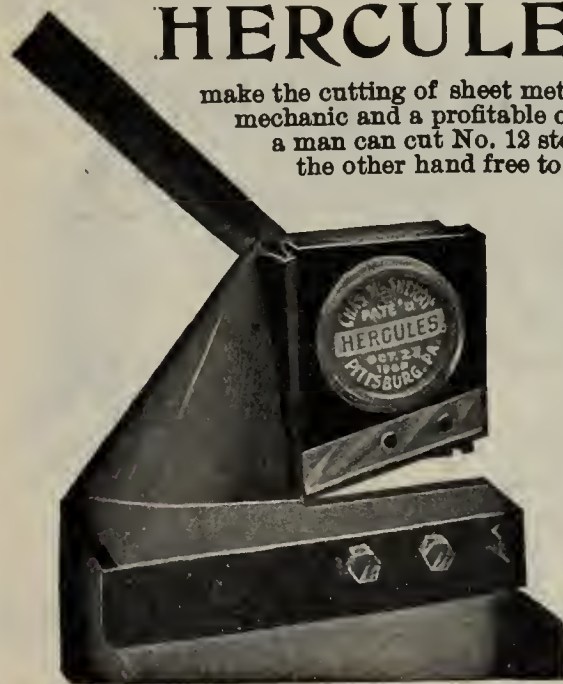
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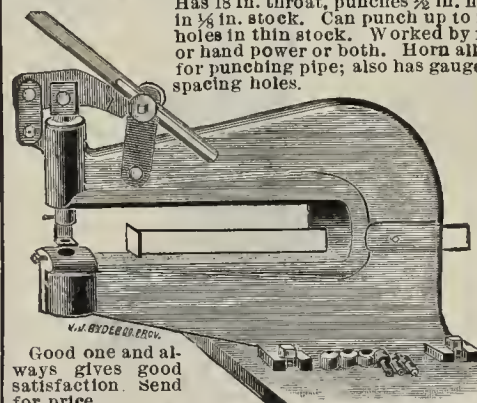
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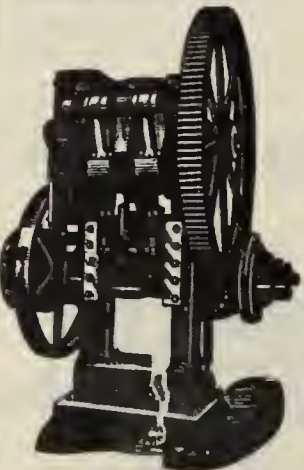
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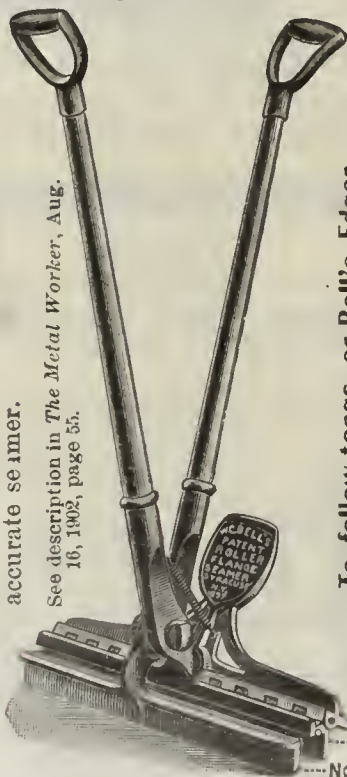
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See description in *The Metal Worker*, Aug. 16, 1902, page 55.

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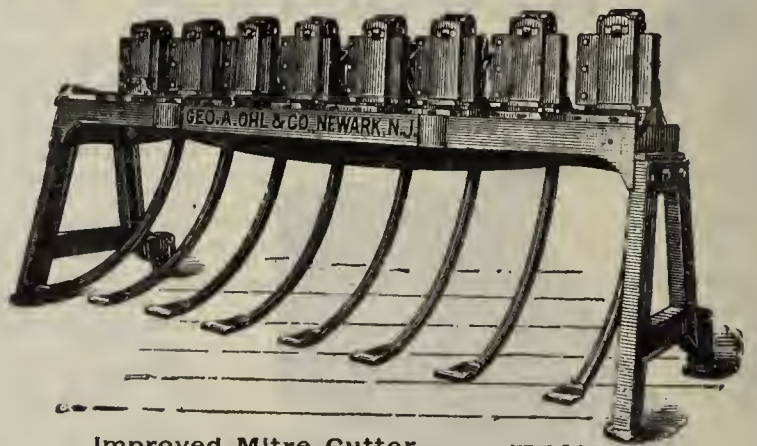
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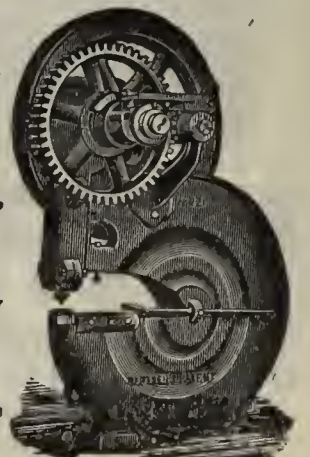
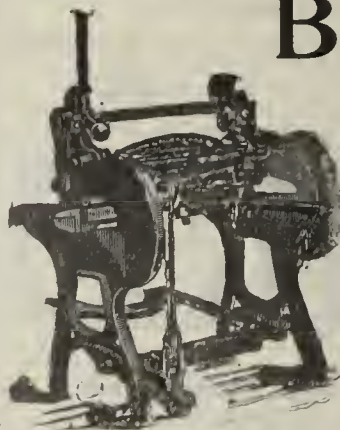
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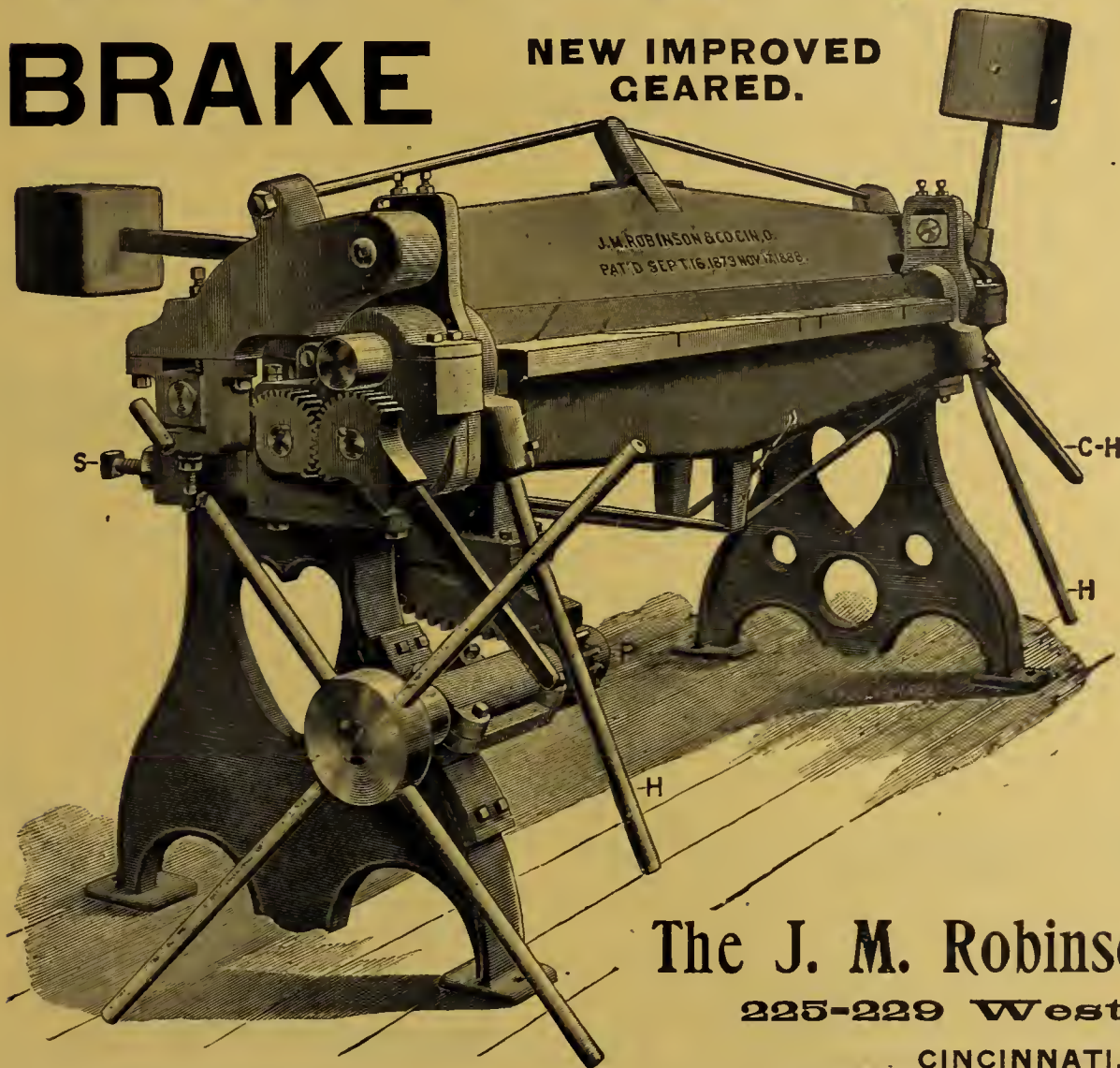
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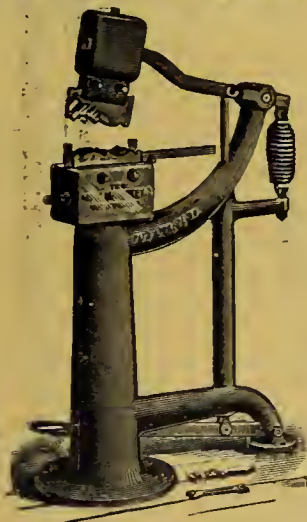
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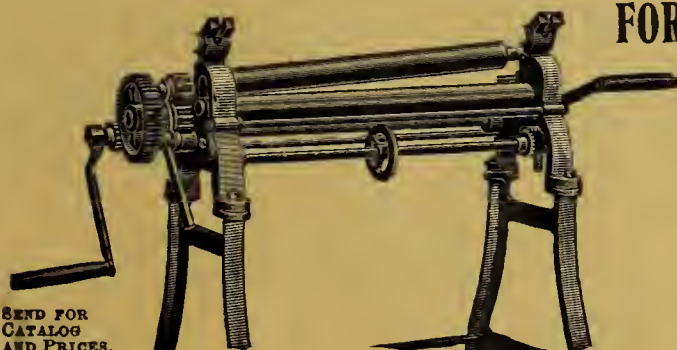
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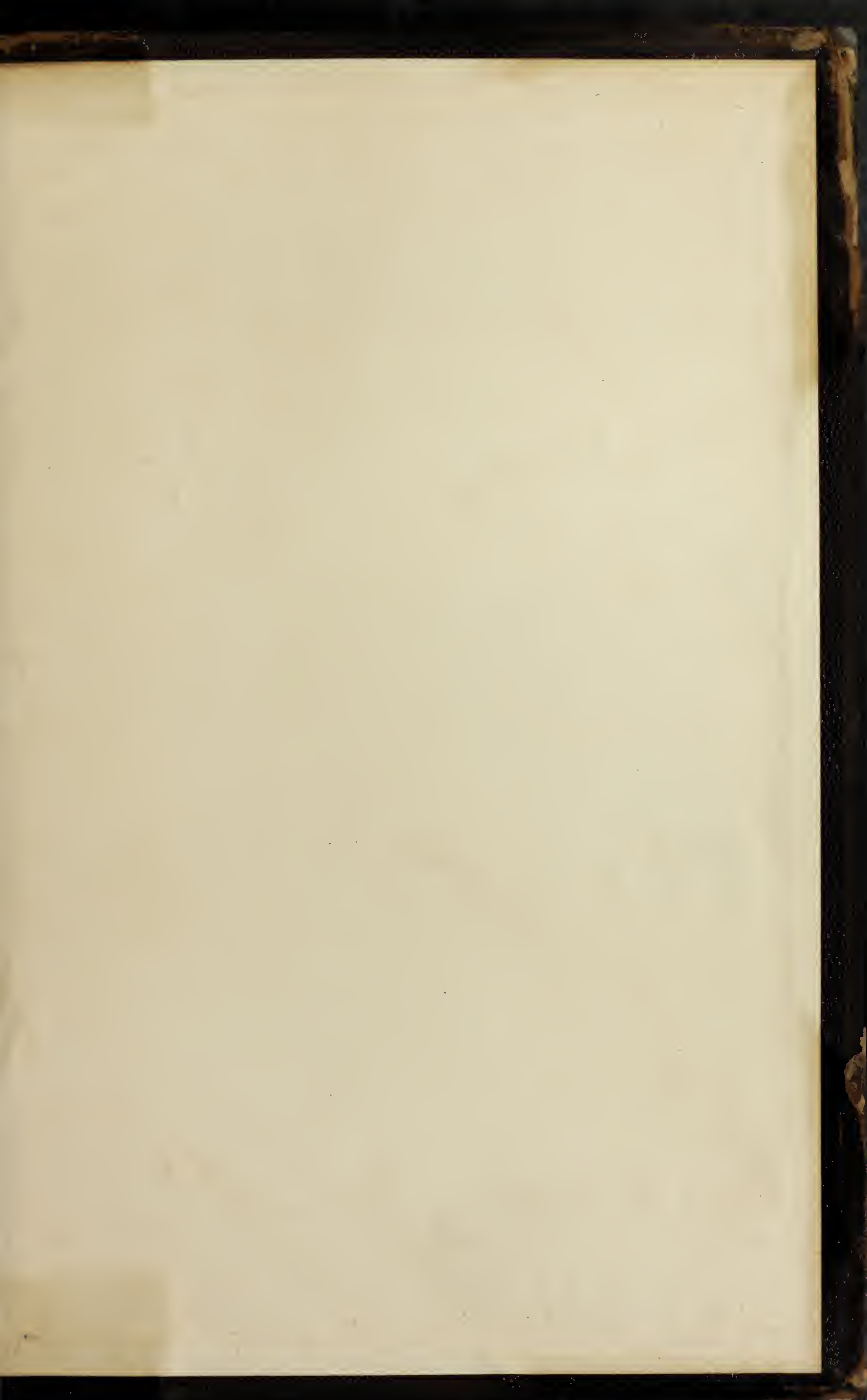














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